SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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Original Correspondence.

COLORADO MINES—No. XX.

HEAD OF THE PLATTE RIVER, PARK COUNTY.

SIR,—I am desirous of drawing the attention of my English friends to a part of the above county, inasmuch that the ores are not only very rich, but exceedingly abundant. There are about 20 mines commenced, and several of them pretty well developed. Of the most conspicuous are those known as the Rob Roy group. The products from three of them I have recently made a quantative analysis. The concentrations I made by very careful and close panning in hot water; the samplings are beautifully clean and bright. The first one I take is the Gold Star Mine, which is a full claim—1500 ft. in length by 300 ft. in width, containing 10·33 acres. The geological formation in which it is situate is the Upper Silurian, which consists of granite, gneiss, hornblendic rocks, diorite, porphyry, and trachyte, with some thin veins of greenstone. Felspar is strongly represented in all the rocks, except the quartz, which latter in some of the veins is nearly pure silica, both crystalline and granular; the bulk of it, however, may be denominated quartzite, it being strongly coloured by the oxide of iron, carbonate of copper, and manganese. Where the little veinlets pass through this they are often composed of a bright red gossan, which is very rich in free gold; they act as feeders to the lodes. I have had many samples that assay at 20 ozs. to the ton. The great bulk of the system is certainly schistose, which is interlaminated with vein quartz and thin coatings of talc, mica, and chlorite. Baryta occurs only in the lodes, and this is exceedingly heavy, being a hard sulphate, and laminar in structure. Syenite is only found in masses, the same with the opaque mountain white quartz; the latter is quite non-metalliferous. Alumina forms fully 10 per cent. of the gangue of the lodes and a large proportion of the gneiss, although silica is the predominating constituent of all the rocks. Some of the alumina in the vein matter is a sulphate, and quite soluble in water. Many of the rocks are highly ferruginous, and when broken disintegrate on exposure to a humid atmosphere. Structurally the general formation may be termed stratiform; but subject to intervening abnormal protuberances, which are mostly of an igneous character. It has a north-easterly trend, varying in its inclination from vertical to 60° both east and west. Through this Gold Star claim runs a mineral-bearing zone or belt, proved to be over 150 ft. wide, and in it are three lodes and quite a number of small veins. [A cross section of the belt is forwarded with the letter, and may be examined at the *Mining Journal* office by those interested.]

I have only taken one lode for the purpose of valuation, and called it the centre lode; but in my opinion it is not the main one. It is 4 ft. thick, with a course N. 15° W., but subject like all the others to curvatures and deflections; its dip at the shaft is 80° westerly. Most of the lodes up here in this part of the mountain correspond with this.

CONCENTRATIONS AND ANALYSIS.—To arrive at a true valuation, which is all the mineowner needs, I generally adopt the system of selecting the leading vein of the lode, where such is distinct. In this case it is 1 ft. thick, or 25 per cent. of the entire width of the lode. I take an average sample of 10·25 ozs.; its specific gravity is 2·9285, which gives 183·93 lbs. per cubic foot for the 1 ft. wide, equal to 3·294 American tons of 2000 lbs. for the lineal fathom.

	Ounces.	Per cent.
1.—Copper—carbonate and sulphurets	2·20	22·55
2.—Lead and zinc blende	1·00	10·25
3.—Antimony and arsenical mundic	0·40	4·10
4.—Magnetite	0·50	4·25
5.—Silica, baryta, and felspar, tailings and seconds	0·85	8·71
6.—Copper pyrites, floatable	1·50	15·37
7.—Iron as oxides	0·40	4·10
8.—Alumina and felspar	0·40	4·10
9.—Slimes, chiefly alumina and earthy matter, with light grey magnesia and some lime —all this is rich in float silver	2·13	21·83
10.—Waste in washing and calcining	0·87	8·92
Total	10·25	

Gold, 1·75 ozs.; silver, ·60 ozs.

The volatile products from the above, chiefly in sulphur and arsenic, was 20 per cent.; the antimony were not reduced—this under a proper heat would be eliminated also. The test sample shows that there is 56½ per cent. of metallic mineral of commercial value in the stone.

I now take the remaining portion of the lode, which is 3 ft., and take carefully an average sample of 7·66 ozs. Its specific gravity is found to be 2·66, therefore it weighs 162·50 lbs. per cubic foot, giving 8·775 tons per lineal fathom. By very close concentration it produces in metallic minerals the following result:—

	Ounces.	Per cent.
1.—Copper and silver-lead, with zinc, blende, and magnetite	2·50	19·15
2.—Gold sand, finely concentrated (crop)	0·36	2·75
3.—White antimonial and arsenical pyrites, with traces of tellurium and bismuth	1·00	7·66
4.—Slimes, composed of silica, lime, magnesia, alumina, hornblende, and felspar, with some oxides	3·00	22·98
5.—Waste in washing and calcining	0·80	6·12
Total	7 66	

Gold, 12 dwts.; silver, 40 ozs.

This shows there is 29·56 per cent. of metallic mineral, now add the produce of the leading vein, 56·50 + 29·56 ÷ 4, giving an average of 21¼ per cent. for the entire lode. This ore is taken from an underlay shaft 50 ft. deep. An adit level now going in will attain 275 ft. of backs at the shaft. The porphyry dyke will exert a powerful influence on the lodes and veins; as yet it has not been proved in what direction it runs, neither is its dip, it only having been cut into at its outcrop on the north side of the claim. There is plenty of water in the valley below, running all through the year, and I cannot see any reason why the entire bulk of this mineral belt should not be utilised—the quantity of stuff is enormous.

Rob Roy and Ouray are not more than 200 fms. east of the preceding mines; they form two out of eight on the same lode, and are near to a small deep mountain lake. The lode forms a slight curve, but its average course may be taken at N. 46° W. true meridian, or 21° 30′ magnetic; the variation is 14° 30′ east. There are several shafts, the deepest of which is only 75 ft. A tunnel is being driven up from about the centre of the Ouray, at a point 300 ft. above the river in the valley below; it will attain 750 ft. backs on reaching the Rob Roy shaft. [A section comes in here, which may be seen at the *Mining Journal* office by those interested.] The geological formation is the same as of the preceding mine; the lode is a very strong one, varying from 2 ft. to 10 ft. wide, dipping to the westward. The part containing the solid ore at the bottom of the shaft is taken at 3 ft. thick, and may be calculated thus:—From an average sample weighing 10·25 ozs. its specific gravity is 3·3439, thus giving 208·99 lbs. per cubic foot; then 36 × 3 × 208·99 ÷ 2000 lbs. shows it contains 11·28 American tons per lineal fathom.

BY CLOSE CONCENTRATION:—	Ounces.	Per cent.
1.—Copper—carbonates and sulphurets	4·00	41·00
2.—Silver-lead and zinc blende	1·56	15·99
3.—Gold sand, very rich	0·35	3·58
4.—Gangue, silica, alumina, felspar, baryta, and calcite	1·08	10·07
5.—Slimes, richly argentiferous	2·57	26·34
6.—Waste in washing and calcining	0·69	6·86
Total	10·25	

Gold, 2·95 ozs.; silver, 65 ozs.

This shows there is over 60½ per cent. of metallic mineral in the lode. The ore dealers and smelters only pay $1·60 per unit for copper, 60 c. for lead, 20 c. for clean zinc blende, silver $1·10 per oz., and $18 for gold; for the antimony and arsenic nothing; for the bye-products, such as bismuth and tellurium, no notice is taken, although some of the ores contain quite an appreciative quantity.

A mill site of five acres just below the mines is a valuable adjunct thereto, as it takes up the land on both sides of the river, therefore commanding all the water to the extent of the claims. An excellent wagon road passes down the valley, which at about four miles distant will meet the railway now under construction. The snows are deep in winter, but this does not in any way interfere with the underground workings. Timber for the mines and lumber for all building purposes is plentiful, and mine stores at Alma, 10 miles distant, are very reasonable in price. I have taken a good deal of pains to make these calculations plain and intelligible for your readers, so that persons visiting this district of Colorado may judge for themselves. They will find one thing at least—a perfect avoidance of any exaggeration. I have not the least idea what the mine-owners may ask for their respective properties; but from what I know of them I think it will be very reasonable. I pronounce it as a good field for the investment of legitimate capital.

Alma, Nov. 18. CHARLES S. RICHARDSON, G.M.E.

COLORADO UNITED MINING COMPANY.

SIR,—I am informed by several gentlemen who were present at the meeting held on the 4th inst. (whose testimony is beyond all doubt) that the show of hands was in my favour, and that the amendment in favour of an adjournment was not carried. At the same time I cannot refrain from expressing my surprise that the Chairman should have declined to read Mr. Ward's (the late agent) letters to the members present, as they would have confirmed all I have said and written upon the subject. I am pleased to state that the meetings held in consequence of my action have had the effect of bringing forward full reports and accounts, almost to date, showing profits and a statement from the board with regard to an early dividend.

London, Dec. 6. A. J. SMYTH.

CORPORATION OF SOUTH AUSTRALIA COPPER MINES.

SIR,—In the *Mining Journal* of Nov. 25 there is a letter from Mr. W. B. Palmer, on Directors' Duties and Payment. I wish it were brought to the notice of the shareholders in the Corporation of South Australia Mines. The prospectus of these mines was brought before the public about 20 months back, and if one-tenth of what was asserted therein was true, the shareholders now ought to be receiving a first-rate return for their money, but as yet nothing tangible has come of it. They appear to have commenced work in the Blinman Mine, the last mentioned in the list of the said prospectus, although the first, the Burra Mine, it was asserted that the copper here was 40 yards wide and 200 yards long, but it does not appear up to this time that this mine has been worked upon. We know that the best of mines can become a failure from bad management; we also know that some mines become simply the directors and the officers of the company; the shareholders are treated from time to time with grand promises that never come to anything, and when all the money is obtained that can be, the affair goes into Court, and there is an end of it.

Nov. 30. SCRUTINY.

MINING IN NEW SOUTH WALES.

SIR,—There has been a steady revival lately in our tin mining here owing to the discovery in several different localities of good tin-bearing drift (alluvial) on the true (or original) bottom below old worked out shallow surface workings, and also more especially in new ground where the overlying basalt has been sunk through, and the old beds of the earlier creeks and rivers thus tapped. The depth of sinking varies from 50 to 200 ft., but mostly about 120, so that comparatively poor men are able to work these deeper leads, except in such cases as where the water necessitates a steam-pump, when of course the capitalist has to be invoked.

There have been four or five new companies formed here lately to work this class of mine, all of which are paying well, and most of the shares up to a good premium already, notably amongst these are the Brickwood and the Wesley, and the following short report on the latter for last month gives a good general idea of this class of mining:—

The mining manager of the Wesley Tin Mining Company (Limited) reports for month ending Oct. 7 as follows:—"Return of tin for month, 56½ tons. Hume's Tribute: This tribute continues to open out in a very satisfactory manner. The wash is now from 7 to 8 ft. in depth, and of first-class quality, and no doubt next week will still further improve. The party have made arrangements for the erection of a whim, as the whip now in will be inadequate for the purpose of raising the quantity of wash-dirt necessary to keep the box employed when sluicing operations commence. The face or drive is now in 20 ft., and the show on either side is very good, and at the end of the face first-class. Gravey and party are down 95 ft.; the rock is hard, and the progress is very slow. They should be pretty well out of the rock next week, and a few days will then tell the tale; and if the wash-dirt is struck a race for the first washing will result. Knight and others' shaft is still hard; depth, 30 ft. Griffiths and party are down 65 ft., and as the shaft is fairly timbered the progress must be regarded as very fair. Flannery's prospecting area: The shaft (125 ft.) continues in rook, but will not last many more days. It is well to know by actual result what is at the bottom, but I have studied the formation of the Wesley to little purpose if this proves a duffer. The lead going in this direction, that is Flannery's present lead, is simply wonderful. Depth of wash 14 ft., average value 1 cwt. to the load, and still making thicker and wider. These are the prospects going south-easterly, and brighter could not be wished for. Water supply: Apropos to the demand in this direction likely to be made during next month, it affords me the greatest satisfaction to state that we have fully two months supply which should, and doubtless will, with present prospects, make the months of November and December the two best months the claim has ever seen."

There are some fairly good lodes also known to exist, some of which are known to be 2 or 3 ft. thick, and said to go from 30 to 40 per cent. of tin, but as this class of mining is not yet thoroughly understood by us they will probably lie idle so long as good alluvial can be got. Another item which is coming to the front is pyrites, as during the old mania many reefs were worked down to the water level, but directly the free gold fell off, and the (richer really) pyrites began to come, they were abandoned as their was no ready market for the ore here, nor a known one at home, but now that the great spread of railways makes carriage cheap, easy, and certain, and the news has spread of the great price fetched in England by the Wentworth freehold pyrites (from 2000*l.* to 3000*l.* per ton), many old workings are being looked up and samples assayed, amongst others some from Newman's lease, at Major's Creek, were tried last week and gave 179 ozs. of gold per ton from the rubbish (in the old miners' eyes) left in the drives as not worth taking out.

In Queensland they are also successfully working a new find of gold and silver bearing lead ores, which the following report (from one mine only) will give your readers a fair general idea of:—

The managing director of the Ravenswood Silver Mining Company (Limited) reports progress on Oct. 6 as follows:—"A pair of crushing rollers are being erected in an ore shed alongside the main shaft engine-house, and will be driven by the pumping-engine; as soon as this is completed, I will make a start to raise first-class ore. A great deal of second-class ore will have to be raised at the same time, but this I must avoid as much as possible until dressing appliances are erected. The rollers are for reducing to a suitable size for handling and bagging the first-class picked ore. The pumping-engine (25-horse power) and winding-engine (16-horse power) are complete and at work, completely housed in, and engine-house floor laid down. Poppet-heads (50 ft. high), and brace (20 ft. high) ar completed; tramway, 250 ft. long from brace to site of ore-dressing sheds, partly erected. Main shaft, 8 ft. by 4 ft., clear of timber, sunk to a depth of 115 ft., timbered to a depth of 105 ft. A main level cross cut is put in at 60 ft. from surface to connect old workings. At 76 ft. 6 in. from the main shaft a 5 ft. formation is met with, carrying small nodulæ of ore. This formation, where met with, does not carry sufficient ore to work; but the probabilities are that it will make into a workable lode at a depth. At 85 ft. from shaft the hanging-wall lode is met with, 5 ft. thick, carrying 2 ft. out of 5 ft. of good ore. At 46 ft. 6 in. from hanging-wall lode, the foot-wall lode is met with, 5 ft. thick, carrying about 2 ft. of good ore. At 100 ft. from surface the second level is put in; in this level, 14 ft. from shaft, the hanging-wall lode is again met with, about the same quality as at the 60 ft. level. A contract is now being executed to drive to foot-wall lode, which will be completed about the end of the current month. The hanging-wall lode is again met at the bottom of the main shaft, 115 ft. deep, but is not yet sunk through. Surface workings, south of main shaft: Opposite, but a little south of main shaft, are our deepest surface workings—60 ft. deep, —worked south about 200 ft. in length. At this point, where the foot hanging-wall lodes meet, about 200 ft. south of main shaft, the bonanza of the mine commences. We have here the cleanest and best priced ore found in the mine, the lode being worth between 400*l.* and 500*l.* per fathom, but very little has been taken out, owing to the workings being flooded by water a few days ago, after the find, and which we have not cleared. In the level, 30 ft. above, the ore was missed, owing to the great width between the walls. At 367 ft. further south our next best workings are. They are worked about 200 ft. in length, depth 50 ft.; the ore is first-class, realising about 40*l.* per ton. The width of lode varying from 3 ft. to 10 ft. between the two workings in 200 ft. of ground not yet proved, but has good ore at each end. The next distance, 693 ft. is unproved ground; croppings of second-class ore, however, can be seen at various places along the surface. At the distance named, a perpendicular shaft, 70 ft. in depth has been sunk; but the lode has not yet been driven through. The next distance is 264 ft., several shafts varying from 5 ft. to 30 ft. have been sunk on shoots of good ore. The width of lode has not been ascertained, however 18 ft. can be seen on the surface, hanging-wall can be seen; but we have not as yet uncovered the foot-wall. The next distance 299 ft., takes us to the south boundary unproved ground, small veins, however, of good ore can be seen on the surface. Surface working north of main shaft: These workings are chiefly on the hanging-wall lode: value of ore about 30*l.* per ton. Distance 66 ft.: An underlay shaft, width of lode 5 ft., worked to a perpendicular of 35 ft.; both first and second class ore. Distance 74 ft.: Perpendicular shaft, 35 ft. in depth, length of workings about 100 ft., width of lode about 10 ft., face of workings good, worked on underlay to the surface. Distance 241 ft.: A series of shoots of good ore makes its appearance, the bearings of which are from foot to hanging wall lodes. The ore is of better quality than that from hanging-wall lode, and contains gold in payable quantities, that is, it will more than pay the cost of parting from the silver. It is intended to work this part of the lode separately. Distance 315 ft.: Foot-wall lode; several small shoots of ore in an open trench 6 ft. deep. Here we have the best assay in the mine, getting 290 oz. silver to the ton of clean ore. Distance 76 ft. to north boundary: No ore found, and parties working beyond cannot find lode. Aggregate distance north of main shaft 772 ft.; aggregate distance south of main shaft 1784 ft.

Sydney, Oct. R. D. A.

THE CONDUCT OF MINING—THE CRITERION OF ITS SUCCESS, COMPARATIVE OR COMPLETE.

SIR,—Conduct in its relation to mining is a comprehensive term, and is important alike at all stages of its incipiency and progress, and to its every department—practical, scientific, and financial. If it had no analogies it would be a mere speculative enterprise—an empiric pursuit of which individual experimentation would be a necessity as its guide, and the only criterion of its value, but its quality is a development, a development of its salient features and characteristics. Experience has disclosed some of them; science others until at length it has become a science in its practical procedure and application of the auxiliary sciences. I know of no industry to which so many important branches of the sciences are not only applicable, but beneficially helpful and subservient, such as mechanics, chemistry, mathematics, mineralogy, geology, &c.; besides, the practical working department of this industry is, apart from the application of all or either of the auxiliary sciences, a many sided one.

We premise that business is intended in the working of mines and not that they be inaugurated for the purpose of one-sided gambling operations; or, indeed, for any gambling operations whatever. We also premise that a judicious selection of mineral ground has been made to constitute the enterprise. If such has been the case a knowledge of its prominent characteristic lineaments, it must be assumed, was previously realised. As I stated in a former letter published in the Journal, the one vein successful mines prove the exception, and not the rule. Mines in the majority of instances to be profitably and satisfactorily successful must embrace within their limits a series of lodes, as indeed they do, or two or more parallels, but generally the series system is found to prevail. Such systems in fecund areas include the transverse and oblique courses, known in miners' parlance as cross-courses, slides, dykes, and faults, usually directly non-productive, but indirectly and primarily of general paramount importance, and in many instances of inestimable value. The mineral kingdom has its laws, as have the animal and vegetable departments of this great and ramified realm of Nature; and if we do not know as much of the *modus operandi* of the former as is known, or assumed to be known, of the other two departments, there is no reason why we may not know as much of the effects. If a certain seed—the acorn, for instance—will and does under naturally favourable conditions develope into the stately oak, so will the initial constituents of metalliferous minerals develope in repository laboratories, to which an unerring law of Nature has assigned them, where they are found and will still be found the product of the operation of laws, analogous in their mode and manner of working to those of the other two subrealms of Nature's sublimary empire; but we know something more than some of the effects produced by the operation of natural laws in the mineral kingdom. We have evidences most conclusive, next to demonstrative, of the principal agencies employed and the mode of their working, from the knowledge of which that which was previously shrouded in impenetrable darkness becomes eradicated with the light of intellectual truth.

The theory of mining respects its dual physical character, the active agents employed, and the passive material upon which they act obedient to laws more potent than descriptive, from and on the action of which all metalliferous deposits proceed and depend; but it is not alone with the physical laws that we have to do in the prosecution of mining, although its importance, as it respects its success, cannot be over-rated, as the physical conditions, whether understood or not, are vital to the issue, whatever that may result in. If the natural conditions be unfavourable, the application of the most superior practical skill, aided by science, can only be effective, amelioratively, and not in any sense compensatively. On the other hand, where the natural conditions are favourable, their lines well and prominently outlined, their character and quality veritably indicated, symbolised in Nature's vernacular, the only language in which she can speak to us from this realm of her spacious domain, which, though voiceless, is interpretatively intelligible, and may be understood by noting articulations impressive on the eye, though silent on the ear. It would seem that many essaying to direct the operations of mining are utterly oblivious of such teachings, and ignorant of the fact that Nature is her own best monitor and most unerring guide, failing to recognise which the assumptions of ignorant conceits are followed to ruinous results.

The practical conduct of mining should respect the physical conditions of the area proposed to be developed, the relative situation of both the productive and non-productive veins known to be embraced within the prescribed limits, and care should be taken to ascertain their characteristic features as well as their number, or as many of them as it may be desirable to know in order to guarantee the safety and effective certainty of prosecuting successfully certain lines or courses of procedure proposed to be adopted. By effective prosecution I mean doing the work once for all. Whether the result be good, bad, or indifferent, the experimental operation in respect of it should satisfactorily answer the end intended, leaving no room for doubt or indecision in respect of conclusions. The next best thing to knowing that a mine is good is to know that it is not, or likely to be, so that money may not be expended in a hopeless endeavour to compass and realise what does not exist. I have been induced to this train of thought and to its expression by the numerous futile and abortive efforts which I have witnessed in several parts of this State to developе the resources of mineral sections by men whose natural or acquired intelligence never invested them with the dignity of expressing or entertaining an idea that the destiny of mines was in any way affected by natural laws, or that their success as enterprises depended on the manner of working them, whose knowledge of mining was restricted to sinking haphazard holes in the ground in eccentric directions as caprice or fancy might dictate. There is in this district one or more illustrations of the facts I enunciate—one in particular, done to death by sheer administrative and executive incompetency. A splendid property—if properly developed—defaced, demoralised, and reduced to chaos by senseless and abortive efforts to realise objective results on lines tangential to their plainly indicated repositories. The head, heart, and abdominal cavities, figuratively expressed, are lost sight of and departed from through not knowing the technical expressions of Nature's language symbolised indicatively. A *savant* of this sort, the so-called superintendent some time since of the property in question, when enquired of as to the appearance of the mine intrinsically, feebly replied, almost despairingly, that there was much room for improvement; but on its being suggested that the indications were good, he curtly, if not snappishly, retorted—"Miners do not want indications, but ore." With as much propriety might a tiller of the soil and a prospective reaper of the fruits of the earth reply in respect of his growing crops that he did not want the blade, the bud, or the blossom, but the full corn in the ear and the ripe fruit on the trees. If indications go for nothing all prospects are annulled, and a blank, black indefinable chasm ensues between all absolutely undemonstrated objects and desire. Nothing could be more fatal to the creditable endorsement of a miner's status and pretensions than the expression of such an ignorant conclusion. It is easy to infer why the mine has been lost under such a direction, and if lost previous to his induction and incumbency why it has not been found, and why it will not be until a radical change of procedure is inaugurated and perfected. Valuable mining properties are denounced as failures, and districts comparatively depopulated for no other cause or reason than

I have set forth. The country has suffered more from the unpardonable incompetency of mine superintendents than from all other adverse causes in the aggregate at least, Such is the evidence which this district affords. ROBERT KNAPP.

Elsworth, Nye County, Nevada, Nov. 13.

MINING PROGRESS IN BRAZIL.

SIR—The activity in mining matters continues, and has actually aroused the old St. John del Rey Company. The new manager or superintendent of the company is trying to negociate for fresh mining ground, and it is presumed that the move is in the interest of the company. Col. Del Mar is off south trying the hydraulicing process, and notwithstanding his frequent statements in the columns of your Journal that the world must not look to Brazil for its gold supply, he is getting concessions, or rather applying for them, and trying to patent a process for working for gold. Work goes on well with the French Syndicate; the Sarilho Mine at Raposos is improving, as also is the produce of gold at Passagem.

Reports here are that a French professor, Director of the School of Mines at Ouro Preto, has been reporting on mines in the neighbourhood of Raposos. Surely there is an awakening; it is to be hoped that all these "titled gentlemen" will report correctly. Facts are better than reports. I see that even in London gentlemen are occasionally in the habit of writing up mines that they never saw, and even going into great calculations on the large profits to be made. With the magnificent mine at Morro Velho, what in the world can the St. John del Rey Company want of new ground? Have they not enough with Morro Velho and Cuiaba to look after? We want to see success—not failures. MINER.

Catas Altas, Brazil, Nov. 1.

INDIAN GOLD MINES.

SIR,—I think shareholders should insist upon having monthly returns from the companies now crushing, or those that may from time to time commence crushing. Many other gold and silver mining companies do it, and I see no reason why it should not be systematically done in Indian mines. It is a very simple matter—so many tons crushed, so many ounces of gold produced. If this were done at the beginning of each month, as applicable to the operations of the previous month, shareholders would know where they were, which is more than can be said at present. J. W. P.

Westminster, Dec. 6.

GOLD AND DIAMOND MINING IN SOUTH AFRICA.

SIR,—We have much cause to be thankful that up to the present we have escaped the dreadful scourge of small-pox. The disease is subsiding throughout the colony, and people are beginning to breathe more freely than they have done during the last four months. The Mining Board, too, is slightly convalescent, and although their case is perfectly hopeless, they may in their present state linger for some time. There has been a dreadful fire in the Dutoitspan-road, supposed again to be the work of some scoundrel, and the insurance companies are offering a reward for the discovery of the perpetrator of the dastardly crime. It is strange, but true nevertheless, that a fire never takes place here unless there is a rumour of foul play.

Everything throughout this camp is very dull indeed; at the same time every person who has watched the financial affairs of the diamond fields as closely as I have cannot fail to discover a slight break in the clouds. The reckless speculation of two years ago has taught this community a severe lesson, and many persons have actually fallen into the pits they prepared for others, Many questionable concerns have been wiped out, and some others are doomed, so that in a short time we shall have nothing but good sound companies, all containing the elements of success. This is what I have striven for during the last 14 months, and although I have been grossly abused for so doing I have never swerved, and I hope eventually to have the pleasure of informing your readers that the majority of our diamond mining companies are paying good dividends, as good as the Standard, British, Central, Barnato, French, Schwab's Gully, and Baxter's Gully, which, taken in the aggregate, pay about 34 per cent. per annum on a capital of nearly 2,000,000*l.* sterling.

The question of fuel is a very serious item with most of our companies. Coal is from 15*l.* to 18*l* per ton, and at that price contains fully 25 per cent. of shale; wood is equally dear, and I venture to think that as soon as the railway is open to this place we shall have the pleasure of using English coal, notwithstanding our extensive discoveries. The amalgamation of all the companies in De Beer's Mine is still talked of. I should be sorry to see the whole of the claims taken in at the prices named, as I believe it would be a serious mistake. All the ground along the north side and in the north-east corner of the formation is good, but fully one-half of the claims in the De Beer's formation are worth only a merely nominal price. In the Kimberley Mine the reef in the east end gradually settles down; however, nine of the companies are earning good dividends, the lowest being at the rate of 25 per cent. per annum.

In the De Beer's formation the Schwab's Gully Company have just declared an interim dividend of 5 per cent., and the De Beer's Diamond Mining Company, Baxter's Gully Company, and De Beer's Central are earning their usual dividends. I hear of splendid diamonds being found above Hebron, and one of the Fosters is here trying to get his father's farm declared a public diggings. I am fully satisfied that this province is full of diamonds, and that the mines which are already opened are as nothing compared to the mines which will be opened eventually.

Illicit diamond buying is reported to be very much on the increase since the formation of the "Protection Association," this is easily accounted for from natural causes. Nothing but experts are admitted into this charmed circle. I have just seen a friend from Jagersfontein who informs me that during the past six months the Mining Record has done much to injure that mine, as most of the articles savour of Cape smoke and things. He thinks the coon that was horsewhipped out of Kimberley will get a second edition at "Fauresmith." Some beautiful stones are being found at Jagersfontein; but everybody there groans beneath the weight of floating reef. The affairs on our Northern border are still in a very unsettled state, and the Boers openly assert they will exterminate Mankorane's people, sparing neither women or children. The De Kaap Gold Fields have not materially improved the financial position of the colony; but, on the contrary, have caused outsiders to look with suspicion on our most legitimate undertakings. There are several places in the Transvaal well worth the attention of companies, and I would point out for the benefit of intending prospectors that all the payable gold is found in runs of schistose rock which is crossed and recrossed by numerous strings of quartz, which vary in thickness from 1-16 in. to 3 or 4 in.; some of these branches are very rich in places, but in no case up to the present have they been proved to continue in depth, although I have no doubt that in some places they will be found to do so eventually.

I have been informed on reliable authority that while Kitto was exploring the Transvaal for the English Government he discovered an extensive gold reef, which is payable; and that he also found sapphires, which he showed to my informant. In consequence of the outbreak of hostilities this information was not imparted to the Government. At the Spitz Kop some very nice gold is being found; but as yet not in large quantities. However, with judicious management there are places at Spitz Kop that are likely to turn out very well. The claims belonging to Ferguson and party are the most valuable on those diggings. Mac Mac is supposed to be exhausted, but I know of three places there that under proper management ought to pay a fair percentage on a moderate amount of capital. At Pilgrim's Rest there is not much doing yet, but the large amount of capital said to have been subscribed for the development of this property, if judiciously laid out, is ample for its development. At the Waterfall Creek diggings, which are situated on the farm Lisbon, for which Mr. Gwyne Owen obtained a concession from the Boer Government, there is nothing doing at present. This is a great mistake, because there is no doubt that the four claims of Messrs. Hampson and White, and the claim of Mr. Davis, are payable concerns, and as soon as Messrs. Owen and Co. have compensated White, Hampson, and Davis, there will be no obstacle to their forming a company in England to work them. Mr. Hampson informed me that it requires about 60,000*l.* to buy out the owners of the five claims referred to. One thing is certain, the property is worth nothing for agricultural purposes, and although traces of galena (silver lead ore) and oxide of copper have been found, there is not the slightest chance of these metals being found in payable quantities. Diamonds have never been found in the Transvaal, and are not likely to be. The only thing likely to pay in the Lydenburg district of the Transvaal is the gold which is found in the runs of schist, which is already in the hands of old diggers. Notwithstanding false reports to the contrary, there is not a single digger who held ground of any value on the Lisbon farm (Waterfall) who has been compensated.

Kimberley, Nov. 3. CORRESPONDENT.

GOLD IN NORWAY.

SIR,—Calling reference to the remarks of "R. M." respecting the discovery of gold in this country, I am sorry to say, as I inspected the property for a few private gentlemen, I am at present not able to give the information asked for. I enclose a specimen of the gold which, perhaps, you will kindly allow "R. M." to examine if he will call at your office.—*Arendal, Nov.* 27. JOHN DAW, Jun.

THE NEW PROCESS OF MAKING STEEL.

SIR,—In the excellent account of the lime basic practice in last week's Journal there is an error. Would you be kind enough to make the correction in your next issue.

Westminster, Dec. 7. PERCY C. GILCHRIST.

What I did say was that the actual make for October in England and the Continent was 47,717 tons, this being at the rate of 572,604 tons per annum for England and abroad. The estimated output of the basic converters now building in England and abroad is 624,000 tons per annum, giving a within sight production of 1,196,600 tons of basic steel per annum for England and the Continent.

MINERAL RESOURCES OF IRELAND.

SIR,—In last week's Journal under the head of "Mineral Resources of Ireland," Mr. Thomas Tonkin writes:—"In the clay-slate formation of the counties of Armagh and Down occur lead ore veins, on which prospecting on a small scale was carried on from time to time, resulting in the discovery of ore and subsequent working of mines, which, however, did not yield ore in paying quantities." This statement is entirely incorrect, and should not, in justice to the district referred to, be allowed to pass unnoticed. It is well known some of the richest courses of ore ever discovered have been found in the veins of this locality, and lead ore in one instance amounting to over 200 tons monthly was raised, affording handsome profits to the owners.—*Laxey, Isle of Man, Dec.* 5. W. H. ROWE.

SACRIFICE OF SHAREHOLDERS IN LIQUIDATION.

SIR,—I have read the article headed "Sacrifice of Shareholders in Liquidation" in last week's Journal. Having taken a deep interest in the affairs of the Cambrian Mining Company for the past few years I must say the article is very one-sided, and most unfair to the gentlemen who have been exerting themselves to the utmost to make the company pay something to the shareholders who are unfortunately involved therein. The article has evidently been written from information given by parties who have not the interests of the shareholders at heart, and who have not scrupled in the past to issue very misleading statements in order to serve a purpose of their own. Probably you are not aware that Mr. Fell endeavoured by petition to wind up the company, and had it not been for the prompt action of our law agent, and a number of shareholders with whom I was also connected, paying over a sum of money to buy up his mortgage on the mine the company would have been wound up, and the poor shareholders would probably have received nothing, or next to nothing, as composition. That, Sir, is the unvarnished truth, which no one can get over. There is no doubt about the richness of the ore when it is found; but, alas, the rich pockets of ore are not found in sufficient quantity to meet the expenses of extraction and exploration in finding them. The mine, as far as presently seen, is extraordinarily well suited in the hands of mine speculators or dealers to cause a sensation in the minds of the unsuspecting public, but I fear that is all. The new directors and their mining engineer have exerted themselves to the utmost to prove it otherwise, but as yet they have failed; and it is now impossible to say whether it will ever be anything but a losing mine—a short time, however, will decide that. Under Mr. Fell's eye it failed to pay anything, and he certainly had something in view when he wished it wound up, but the speedy and energetic action of shareholders prevented him, and he has not ceased to impede the exertions of those who have now the management, by endless law suits for his own benefit but certainly not for that of the general body of shareholders. I trust in the interests of fair play you will give this letter a place in your next issue.

Ayrshire, Dec. 4. JOHN C. MONTGOMERIE.

POLCREBO TIN MINE.

SIR,—This property has been taken up for the third or fourth time to be worked by a company. The adit level, extending for nearly 300 fms., gives about 12 fms. of backs for 200 fms. on the lode, all of which is worked away. This and a fathom or two in depth below the adit is supposed to be the extent of the first company's workings, from which it is believed they realised considerable profits. Then came a powerful and highly respectable company, with plenty of money, and proceeded upon a plan of working with the full conviction of having a large and rich mine. Three shafts were sunk from surface to command the whole 200 fms. in length which had been worked to adit. Two of these were sunk to the 30 fm. level below adit, and one 17 fms. below adit. In the western part of the mine a level was driven for 80 fms. at a depth of 17 fms. below adit. This level was supposed to be upon the lode which had been worked in the adit, and was small and poor. At the eastern part of the mine two levels were driven, one 8 fms. below the adit, and another 17 fms. below the adit. The 8 fm. level extended for 70 fms., and the backs all worked. The 17 extended for 40 fms., and the backs all worked. It would appear, therefore, that here they had the main lode, and the shaft here was sunk to the 30 below adit, and a level driven 16 fms., but no lode worked at this level. It is supposed, therefore, that here they came upon the same branch that the 80 had been driven upon in the western part of the mine, and supposing the good lode which they had worked upon at the 8 and the 17 did not continue in depth the work was discontinued, and the mine abandoned. The third party who took it in hand induced Messrs. Harvey to join and supply a steam-engine. The mine was cleared of water, and a short cross-cut driven from the level at the 17 under adit in the western part of the mine, and a lode was found worth 10*l.* per fathom. A second cross-cut was then driven, and the lode was found worth 25*l.* per fathom. A shareholders' meeting took place, and a call was made to provide funds to continue the development and work the mine; but Messrs. Harvey, finding they had been deceived by a supposed list of shareholders placed before them when they supplied the engine, at once applied to the Stannaries Court, and caused the company to be wound-up, The engine was left upon the mine, and the present company obtained a new lease of the sett, and purchased the engine, Messrs. Harvey and Co. becoming large shareholders in the mine.

The present company has been formed about 12 months, the engine and boiler having been put in thorough repair. The next operation was to obtain and supply the pitwork, which having been done the mine was drained of water to the 17 below adit, and immediately an examination took place by Capt. Martyn and others, when it was found that the statements made by the miners and reporting agents was fully corroborated, and the company found themselves in possession of a mine, with a lode standing for nearly 200 fathoms in length at the 17, worth from 12*l.* per fathom upwards, as far as seen in various parts, and it is now found that the engine-shaft has been sunk 14 fms. below the 17, at the bottom of which there is a lode from 3 to 4 ft. wide, full of mundic and rich tin ore, so that a level will be immediately driven upon this lode, which will give for 200 fms. long 25 to 30 fms. of backs, with every prospect of quickly opening out that large and rich mine, which the powerful company, who followed those that worked the whole backs of the adit, fully expected to find, but for want of a little enterprise in cross-cutting they failed to find. Nothing appears now wanting but stamps, and a little more of the same energy that the manager has displayed hitherto in opening out this mine to give a result in returns which has not been exceeded by any mine for many years. TRURO.

Dec. 7.

TIN ORE—EAST TREGEMBO TIN MINE.

SIR,—Knowing how extensively your *Mining Journal* is circulated and its contents studied, not only in England, but in all latitudes where English miners reside, whether engaged in developing properties or prospecting for new mineral deposits, it is well to correct the erroneous impression conveyed (to any one not conversant with the metal tin and its ores) upon reading the following paragraph which appeared in the report of East Tregembo meeting, published in last week's Journal:—"Mr. Sharp said that a gentleman—a miner of vast experience—to whom he had shown the ore expressed the opinion that some of it had become oxidised; but Mr. Hugo, who had studied chemistry for many years, said that he never heard or read of the oxide of tin." Surely we must take in for granted that the wrong element—oxygen—has been accidentally applied by reporter or printer. A man may be well versed in organic chemistry but know little of inorganic chemistry, and less of mineralogy. Every miner, and especially "A Miner of Vast Experience," or one who has a practical knowledge of Cornish tin mines, should know that nearly all the tin found in that county is in the state of oxide, the exception being the sulphide of tin and copper—*i.e.*, the so-called tin pyrites which occur in two or three localities. All foreign tin ore is as far as known found only in the form of an oxide.

It may be interesting to mineralogists, and especially to members of the science classes in Cornwall, to learn what the peculiar or novel appearance of East Tregembo ore is due to. Rare specimens of tin ore are preserved at the Jermyn-street and British Museums. Crystallised specimens varying in colour from black to a light amber; wood tin, botryoidal, reniform and radiated; stream tin, rounded by friction; pseudomorphous crystals after felspar, from Wheal Coates, St. Agnes, Cornwall; tin associated with copper-lead, and other minerals, all of which are oxides of the metal which when quite pure has a composition of tin 78·4, oxygen 21·6, with the specific gravity between 6 and 7. The sulphide of tin is a rare mineral, often called bell-metal ore from its resemblance in colour to that alloy; its approximate composition is—sulphur, 30; tin, 27; copper, 30; iron, 13. Specific gravity 4·3 to 4·6. Tin ores are commonly associated with arsenic, sulphur, and tungsten (wolfram). The latter frequently resembles tin ore in appearance. I quite believe in the possibility of finding at any time singular varieties of any mineral. I found some time since in Cornwall, and presented to the British Museum, a most peculiar specimen of albite (felspar), which puzzled everyone until it was analysed, as the crystals were almost transparent and in the form of quartz crystals, six-sided prisms and pyramids, but having the hardness of felspar.

Anerley, Dec. 6. G. M. HENTY, R.E.

SHROPSHIRE LEAD MINES DISTRICT.

SIR,—On the whole the lead mines here are turning out well, and with a better price for that mineral we should have prosperous times. The Old Snailbeach Mine we hear continues to improve, and they are strengthening their pitwork, &c., in preparation for opening out the bottom part of the mine to better advantage. We shall be glad to hear that they are in a position to employ the few old hands they have lately had to part with for a time; for in this district there is not much else for old miners to do. And we hope to see the Tankerville Great Consols Company sending their minerals and getting their materials on the Snailbeach District Railway again, which would, we think, be a considerable advantage to both parties. We are sorry to learn that the water has driven them from the rich ribs of lead ore in the bottom of Potter's Pit. However, this is not the first time it has happened, so that with moderately dry weather it would drain off again to the Bog, and leave a splendid course of solid lead ore which requires but very little dressing to be raised and sent to market, and this with the improvements we hear of at Pennerley and the Bog warrants the expectation of a very considerable increase in the returns of both lead and blende, and we like to see the main shaft at Tankerville being deepened as fast as possible to reach the junction of the two lodes, as pointed out by the manager, and shown by his diagram a few weeks ago. There are several splendid mining properties here standing in abeyance till times mend. MINER.

EAST DEVON CONSOLS COPPER MINE, BUCKFASTLEIGH.

SIR,—I visited this mine with a party of gentlemen, and was pleased to see miners sinking an engine-shaft which the adit warrants by producing black and yellow copper giving a produce of 15 per cent., which I can produce given to me by one of the miners sinking a winze in the adit. There are many tons of copper at the mouth of the adit not dressed. This mine joins South Devon United, being divided by a stream of water there are a great many advantages, it being a short distance from the railway with roads through and around the mine so one horse can fairly draw a ton of copper to the station. It is stated by parties that 500,000*l.* worth of copper has been sold from Emma and Brook, which are now united. I know one of the tributers who won 30*l.* per month in Emma, and when Capt. S. Robins was agent in Brook he sold a parcel of copper that fetched 22*l.* 2s. 6d. per ton.—*Ashburton, Dec.* 7. GEORGE SPARKE.

NEW TORWOOD MANGANESE AND SILVER-LEAD MINE.

SIR,—This property has been visited by mining gentlemen of great experience and authority, who speak highly of the discoveries already made, and believe that with a small outlay large returns of ore can be made, leaving handsome profits. The lodes are large, and composed of excellent quality soft and crystallised manganese ore, which can be developed by deep adit levels driven into an immense hill on the course of the lodes. The silver-lead lode is anticipated to be very rich for silver, which is considered will add greatly to the value of the mine; in fact, it may be worked as two separate mines. In all probability, to commence with, all the force possible will be directed to the manganese lodes, as large and early returns will be made of rich quality ore. The silver-lead lode being situate some distance from the manganese lodes, it is quite possible this portion of the sett could be sold or let, which would realise a large sum of money undoubtedly, if the proprietors thought it advisable; but, in my opinion, this should be reserved for a short time, as silver-lead ore of such strength, and so near the surface, would pay exceedingly well to work. The value of such a lode cannot be estimated, as, in all probability, a great course of ore may be fully expected, which would increase the value of the mine to many thousands of pounds.—*North Bovey, Dec.* 7. C. H. M.

THE ST. TEATH DISTRICT, AND ITS MINES.

SIR,—The mineral deposits of the north coast of Cornwall have hitherto been much neglected, although their value is beyond question, and I should like to direct attention to one or two of them. Wheal Silver and Lanteglos is situated about one mile north-east of St. Teath village, in one of the richest districts for silver-lead in the kingdom. I paid a visit to these mines a few weeks since, and from what I saw at surface there can be no doubt that the lodes already cut are of great value, and Captain Scown told me that he was quite sure they would cut the Soral lode—which was deeper—much richer than the others; but he never saw a prettier piece of ground or a valley with such a beautiful blue clay-slate for producing silver-lead, and he had seen all the silver-lead districts in the country. Last week I received a box of samples and a letter from Captain Scown containing some rich stones of silver-lead from the great lode, and the composition was the same as that found in the Old Treburget, which was the richest mine for silver in the north of Cornwall. This is south-west of Wheal Silver, and is going to start again in the coming spring.

I hope that the company will not be like the last, which never had enough capital in the first instance. I was a shareholder last

time, and should be glad to assist to give the mine another trial, and so would several others in and around the neighbourhood of Camelford. If capitalists would look up this north part of Cornwall I am quite certain they would find it worth their attention.

Wadebridge, Dec. 6. W. PAYNTER, Jun.

WHEAL PRUSSIA AND CARDREW MINE.

SIR,—Can any of your correspondents give information as to the position and prospects of this mine? At the meeting in August last it was stated that the mine was nearly in fork, the drawing shaft all but completed, and that good returns of tin might be expected, and that the prospects of the mine were good. In last week's Journal it was noted that a meeting had been held and a call made, but I could not find any report of the meeting or of the mine. Knowing your willingness to insert all reports which come to hand I am persuaded that the reason of there being no report in the Journal does not rest with you. I should like to know if the mine is now in fork? Is the drawing shaft completed and now in use? Does the tin in the western ground come up to expectation? Has Wheal Prussia lode been seen in the cross-cuts, and value of same? Is there tin in Cardrew lode in the bottom levels near engine-shaft, and how far have the levels been driven east and west? Has any stamping machinery been erected; and any other information which an investor should know would be esteemed a favour if given. Has the mine been inspected recently by anyone except the manager, when and by whom, and what is the substance of their reports and opinions as to the present and future prospects of the mine. ENQUIRER

Dec. 7.

THE GREAT SNAEFELL MINING COMPANY.

SIR,—The directors attention has been called to the following paragraph which appears in the *Mining Journal* of Dec. 2:—

"We are informed that about a month or six weeks ago Snaefell Mine, in the Isle of Man, was so poor that it was intended to wind-up the company, which is in 50,000 shares of 1*l.* each. These were then selling at 1s. per share. In a few days in continuing a long cross-cut a lode was cut into worth, we are told, 10 tons of lead ore per fathom, and shares rose to 1*l.* 10s. each. This is encouraging for Kirkmichael."

The shares have never been sold at 1s. per share, neither have they been sold at 1*l.* 10s. per share, nor has the discovery been made in a cross-cut, but in driving the 130 fm. level north and the value of the end has never been anything like the value set forth in the said paragraph.—By order of the Board, W. E. YOUNG, Secretary.

Douglas, Isle of Man, Dec. 5.

THE TREVITHICK MEMORIAL.—The hearty response which is being made to the question of the Trevithick Memorial must be particularly gratifying to all who have come forward to support Mr. Hyde Clarke's suggestion. It has been thought desirable to defer for a week or two the publication of the names of those who will act as the committee in order that there may be no appearance of giving priority. Those desirous of acting should at once communicate with the honorary secretary—Capt. John Davis, 2, Edinburgh Mansions, Victoria-street, Westminster—who will afford them every information both with reference to the general committee and to the formation of local committees. It is satisfactory to find that the Mining Institute of Cornwall, which it will be observed from the Journal abstracts of papers read there, has already acquired a high position as a practical scientific society, are foremost in the movement. At the recent meeting the President, Mr. W. Husband, C.E., said that with reference to the Trevithick Memorial, they would see in the *Mining Journal*, the day after the meeting was held in London, an account of that meeting, which was a preliminary one. Some friends wishing to forward the matter met together to appoint a committee. The feeling was that they should make the Trevithick Memorial as national as possible. Trevithick worked in two hemispheres, and in every part of this country; and, indeed, the most important of his experiments were made out of Cornwall. And seeing the extent of the field he worked over, and seeing the honour which was awarded to Stephenson, who had monopolised all the honours in the North, and that those who so honoured him were beginning to think that Trevithick had not been done justice to, and that these and others would come forward to assist them in this memorial, the endeavour would be to establish a strong committee in London, with sub-committees in the various provinces or in counties. And he hoped by-and-bye they would be able to have a sub or local committee in Cornwall, and they would have very much pleasure in communicating with various gentlemen so as to make the memorial as general as possible. He hoped the members of the Mining Institute would take a great interest in it, not only because of the man and his inventions, but because of the locality of his birth, which was almost next door to them. The various institutions of the county, such as the Geological, Polytechnic, and Royal, would be asked to take part, and he had no doubt they would all assist, and that the leading members would come to the committee to do honour to a great Cornishman.

THE MACKEAN ROCK-DRILL.—An interesting pamphlet giving the correspondence which has appeared in the *Mining Journal*, Engineer, &c., during the past 10 years with reference to this drill, has just been issued by Messrs. MacKean and Co., of Place Vendome, Paris, and Delahay-street, Westminster, and will afford instructive information both to mine managers and to directors and shareholders of mining companies. Probably no drill known in the English market has been so long and severely tested as the MacKean, the work done with them in the St. Gothard tunnel alone being as much as many others have done altogether. It was stated when the St. Gothard tunnel was holed that six MacKean rock-drills were capable of drilling as many as 24 holes 4 ft. deep in a face about 6 ft. 6 in. square, and that the holes having been charged with dynamite, and properly tamped about 2½ cubic metres had generally been dislodged. The progress of the boring had for some time been at the rate of 20 feet to 24·7 feet per day. Some interesting figures are given showing the results of experiments made in hard granite with the MacKean rock-drill at Geneva, for Mr. Louis Favre, the contractor for the St. Gothard tunnel, which permit of an opinion being formed as to the relative merits of the cross-tool, +, and the flat tool, —, and practically the simpler tool appears to do equally good work. With a pressure of five atmospheres the flat tool did 25 centim. (9¾ in.) in 59 seconds; the cross-tool 31½ centim. (13¾ in.) in 90 seconds. For the work to have been equal the cross-tool ought to have done 37½ centim. in the 90 seconds. With a pressure of 4½ atmospheres the cross-tool did 35 centim. in two minutes, the flat tool 40 centim. in 2¼ minutes. These results are practically equal, the advantage being but a fraction of a centimetre in favour of the flat tool. The diameter was 43 millim. or 1¾ in. in each case. The pamphlet will well repay attentive study by all users or intending users of rock drills.

MINING JOURNAL READING CASE.—The enquiry has frequently been made whether any reading case were published wherein the *Mining Journal* could be filed week by week as received, for protection and reference. The want has now been supplied by Messrs. Slade Brothers, of 169, Great Portland-street, who are manufacturing the Acme self-binding portfolio, to hold 26 sheets (of 16 pages) of the Journal at 5s. 6d. each in cloth lettered, and at 8s. each with leather backs and corners, extra strong, lettered. A pair of ordinary book covers are connected with a stiff back, carrying 26 separate rods, hinged at one end, and closing in a single lock at the other. The numbers can be easily inserted, and are as readily referred to as in a bound volume. The manufacturers claim that the advantages which this binder possesses over all other inventions of the kind is in the extremely neat, simple, and perfect system by which every number is secured in its place by the metal binders, which with the locking bar are practically of endless wear. The ease with which a number can be bound or released, or a single leaf extracted or replaced, its dispensing with all elastics, strings, gummed labels, springs, clips, needles, &c., render it, as it has aptly been termed, the only perfect binder. In America these binders have been largely used, and are utilised in all the Government and public offices; their neatness of appearance and almost unlimited wear rendering them far superior to any other self-binder invented. Externally the binder having a rigid back cannot be distinguished on the library shelf from a regularly bound volume.

REPORT FROM CORNWALL.

Dec. 7.—There is nothing new to be said concerning current conditions and prospects. We are just moving on in a jog-trot sort of way, with rather a tendency, if anything, to increased dulness, though it is very unlikely that we shall sound any lower depths. Within a little more than a fortnight of Christmas, nothing better is to be expected, and the one fact that we have to set against retarding influences is the continued improvement in the weather. But we have had heavy and continued rains enough to make a serious addition to pumping charges, if the improvement continues, for some weeks to come. Take it all round, the present winter season can hardly turn out satisfactory, save to those who take advantage of it for the judicious investment of spare capital

Those who have been sanguine enough to believe in the possibility of any adequate reform in the tin smelting system upon anything like the present lines must have had their faith rudely shaken of late. History has again repeated itself, and the latest appearance of competition in tin smelting has vanished, as nearly all its predecessors have vanished, in the enlargement of the smelting circle. We cannot undertake to say precisely how many attempts to establish independent, or quasi independent, tin smelting concerns the first half century has seen; but this we can say, that they have all ended in leaving competition precisely where it was—nowhere. Either the new comers have been driven out of the field, or if they have been successful in the struggle for existence against the old combination, they have been admitted into the compact.

We can very well understand that when the tin production of the world was limited to Cornwall the smelting combination did not upon the whole work so badly for the tin producer. The smelters could fix the price at which they sold, and could keep that price well up. True, they could also fix the price at which they bought; but it was their interest in doing this to give the miners a fair living return. The competition of foreign tin has taken away from Cornwall the command of the market, and the only effectual operation of the smelters now is in keeping the prices down. This they can effect while the miners decline to go into the market with their metal; but to keep the standard up is utterly beyond their ability. The will may be there, but the power is not, and the olden system, therefore, remains without reason or excuse. And of course it is idle to talk of ticketing when the standards are agreed on all round.

The return to the system of reckoning by three standards instead of two is a matter of very little consequence. No one can object to it if the classification is fairly made, and it is quite possible that there may be sufficient competition even within the circle to ensure that this will be the case. The prices may be fixed, but the decision as to which class any particular parcel belongs must be left to the individual buyer, and we might fairly trust our smelting firms to look after their own interests, even if our mine managers in such a matter were not able to hold their own. There can, however, be no general advantage to tin producers from any modification of existing arrangements, for they do not admit of an approach to genuine competition; monopolies are always onesided, and cannot be otherwise.

The Exhibition of the Mining Institute, to be held next week, will, it is believed, compare very favourably with its predecessors. The entries are already considerably in excess of previous years, and will embrace many novelties. The Exhibition will, as usual, extend over two days. On the first day there will be the customary public luncheon, and on the second papers will be read by Captain Josiah Thomas, "On the Temperature of Dolcoath," and Dr. Hudson "On the Effect of Smoke and Dust on the Health of the Working Miners." This latter subject is of great importance, and beyond doubt Dr. Hudson's paper will be listened to with much interest, the more so because of his knowledge of the condition of the miners of the locality in which the Exhibition will be held. There are 57 exhibitors, against 36 last year, and many of the entries are quite new to the county. Among other matters may be named models of Patterson's "Elephant" stamps, of a mechanical stoker, and of the Vortex turbine, the corrugated iron tube boiler, some 30 different kinds of pumps, a water motor, steel castings up to 2 tons weight, a large collection of india rubber and gutta percha goods, and various systems of underground signalling by electricity. These will suffice for an example to show the Exhibition will be worthy both of the Institute and of the county.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Dec. 7.—Quite a fillip has been given to the coal trade this week by the appearance of real winter weather. Prices are stronger, and the demand is more vigorous and more urgent. This applies alike to manufacturing and house coal. The former, mined on Cannock Chase, is quoted 7s. to 5s. 6d., according to quality, and the latter 11s. to 8s. Cokes are rather more brisk. On 'Change in Birmingham today they were quoted at 16s. for good Derbyshire sorts, delivered; 15s. for common Welsh furnace sorts; 17s. for best ditto, delivered; and 18s. to 22s. for Welsh foundry cokes. Pig-iron was tame, though there were a number of new enquiries on the market. Derbyshire and Northampton sorts were 50s., and Staffordshire part mines 55s. to 57s. 6d. Finished iron unimproved.

On Wednesday, in Wolverhampton, there was a monthly meeting of the Mines Drainage Commissioners. The triumvirate scheme adopted at a previous meeting, by which Messrs. Walter Williams, Edmund Howl, and Walter Bassano were chosen to conduct the business of the Tipton, Surface, and General Purposes and Finance Committees, was confirmed. Mr. R. Williams and other speakers challenged the propriety and fairness of the remarks which, on the occasion of the last appeals for graduation of mines drainage rates the Chairman of the Commission (Mr. Walter Williams) made to the arbitrators. In these remarks the Chairman had practically advised the abolition of graduation. In answer to the observations of the speakers, the Chairman on Wednesday said that a number of arbitration decisions were placed before him showing the gravest injustice, and in the interest of the Commissioners he considered it his duty to make the remarks he did. Mr. Fisher-Smith said that the arbitrators should hear both sides of the question; but hitherto they appeared to have adjudicated against the appellants, and to have been almost the advocates of the Commissioners. Ultimately the subject was allowed to drop.

A meeting of the South Staffordshire and East Worcestershire Institute of Mining Engineers was held at Dudley, on Monday, when a discussion took place upon the paper of Mr. Sopwith relative to the lime process of getting coal. The writer gave no definite information on the economical use of the process. There was no reason why the boring for powder should not be done with the same kind of drill used for the lime, but it would be better in the case of powder to have a deeper hole of less diameter. Less slack was made than with powder; and although the cartridges brought coal down in such lumps that it had to be broken, the fuel stood carriage better than coal that had been blasted. The discussion was adjourned.

A petition for winding up the Homer Hill Colliery Company (Limited) compulsorily was before Mr. Justice Chitty, on Saturday. The petition was presented by Mr. W. Jones, a creditor for 100*l.*, on a dishonoured bill, but on the 20th of last month a resolution was come to at a meeting of the shareholders of the company to wind up voluntarily. Under these circumstances Mr. Jones felt he would not be able to get a compulsory order, and he was quite willing that a voluntary order should be made. Mr. Bardswell appeared, and Mr. Justice Chitty made the order for winding-up voluntarily.

Mr. John Carter, of the Broadwell Colliery, has been fined 3*l.*, and costs by the Oldbury magistrates for non-observance of the 20th section of the Mines Regulation Act, and for infringing the 14th general rule of the same Act.

At Newcastle-under-Lyme, on Monday, Enoch Mould, the certificated manager of the White Barn Colliery, was summoned by Mr. Wynne, Her Majesty's Inspector of Mines, for allowing a shot to be fired in the workings within three months after gas had been found in the mine without withdrawing the workmen from the mine while such shot was being fired. Mr. Mould pleaded guilty. Mr. Wynne stated that as the defendant had pleaded guilty, and declared he would not allow the offence to be repeated, he did not wish to press the case against him, and should be satisfied with a nominal fine, as his object was to warn not only Mr. Mould, but every other manager, that in no case would the firing of shots in contravention of the Act of Parliament be allowed to pass without a prosecution.—Upon this recommendation the magistrates inflicted the nominal fine of 10s. and costs, but warned the defendant that if other cases came before them they should most likely inflict the full penalty.

GLOBE TUBE WORKS.—It will be gratifying to many readers of the *Mining Journal* to learn that these old-established works are to be re-started, Mr. John Spencer having purchased the works and removed his business of a wrought-iron tube manufacturer to Wednesbury. The works are well known in the tube trade, having been in operation since 1847, and were for many years conducted by the late firm of Whitehouse and Co. (Limited). The London address of the house will still be that of Messrs. J. E. and S. Spencer, Queen-street-place, Cannon-street.

TRADE OF THE TYNE AND WEAR.

Dec. 6.—The shipments of coal and coke during the past week have been large on these rivers—at the Tyne Docks, and at all the other principal shipping places. Although the price of coal and coke advances very slowly and buyers are extremely cautious, yet any contracts now made for forward delivery over sea or 12 months, are done at enhanced prices. This applies to all classes of coal without exception, and it is a hopeful feature. It is expected that when the next account is taken for the county of Durham under the sliding-scale that the miners' wages will be advanced; but we do not expect that this advance will be large. The question of restricting the output of coal still occupies the attention of the miners here, and it is expected that the subject will be fully discussed at the miners' meeting to be held in Durham on Dec. 16. There is a growing dislike to the sliding-scale throughout this district. No doubt the miners wish to have a substantial advance of wages, but this can only be realised as the price of coal advances. The Northumberland miners have given notice to terminate the present sliding-scale, and the proposal of the coal masters as to the terms of an amended scale of wages has also been rejected by the men. The masters made an offer to the men to this effect—that if at the next account of sale prices under the sliding scale no advance was due to the men under its provisions they would give the men an advance of 2½ per cent. There was some discussion amongst the miners on this proposition, and ultimately it was submitted to the ballot, which has resulted in the rejection of the offer.

The relations between the masters and miners in Northumberland are therefore considered to be somewhat critical, but this is not likely to lead to any serious complications. The offer of the masters to advance the wages by 2½ per cent., whether the action of the sliding-scale warrants that or not, is a very liberal offer, and in our opinion the men will do well to accept it. The dull time for the sale of best steam coal has arrived here, and will continue for some time; short time is now worked, and this will continue for some time, while the only advance, with few exceptions, as yet realised for next year by contracts is in small coals. It is also clear from the reports from other coal fields in the North and South that the attempt to raise the price of coal, and also miners' wages 10 per cent., is pretty certain to prove a failure. The Northumberland miners will have a general mass meeting on Christmas Day to celebrate the twentieth anniversary of the establishment of their Union, when it is expected that all the men who took part in the formation of the Union who are now living will be present, and these men will be specially honoured on the occasion. When these Unions were formed there was a great prejudice on the part of colliery owners and agents against them; but this feeling has long since passed away, and it is now confessed by all parties that a Union properly conducted has no injurious effect in the relations between masters and workmen, but rather has a contrary tendency, and tends to the prevention of local strikes about petty disputes. The joint committees or boards of arbitration which have sprung from these Unions have proved of immense benefit, and the sliding-scales have also proved very beneficial in their action, and it is to be sincerely hoped that the miners will not discard any of these institutions.

The pig-iron trade has been exceedingly dull during the past week, and the manufactured iron trade is in a similar state. There appears to be a lull in the demand for all kinds of iron at present. Makers will not reduce their prices if they can possibly avoid it; but pig-iron can bear a little reduction from present rates, and yet leave a little profit. This, however, is not the case with finished iron; the plate-makers and others are hard pressed to make ends meet, and restriction is still talked of. It is remarkable that although such a large volume of business is doing in all the great industries there should be so much difficulty in securing fair profits. Ship-plates are 6*l.* 10s.; and angles, 5*l.* 17s. 6d., and that there is plenty of capital available for industries in the district is shown by the fact that the Armstrong-Mitchell Company, which required 650,000*l.*, received offers for about three times that amount. The pig-iron trade has been getting daily flatter, and makers in some cases are now selling at 43s. 6d. for No. 3. Messrs. Connal's stock is now 100,861 tons, a reduction of 100 tons on the week.

The Cleveland ironmasters' returns giving the make and disposal of pig-iron in that district during the month of November were issued last night at Middlesborough. The returns show at the end of the month, there were 85 furnaces making Cleveland pig-iron, and 36 producing other kinds of pig, including hematite, spiegel, and other iron. The total make amounted to 224,526 tons, or 5705 tons less than in the preceding month. The stocks amounted to 237,446 tons at the end of the month, or 1610 tons less than at the end of October. On Tuesday the market was again dull at Middlesborough; little business was done, but there was a further decline in prices. Makers, however, still stand firmly for late rates. The trade is, of course, considerably affected by the extreme bad weather which prevents shipments going forward. The stock of Cleveland iron now held is 237,446 tons, which is not too large a stock for the district. The steel trade keeps very fully engaged, but still prices are low. There is no improvement in the price of any kind of manufactured iron.

THE MANUFACTURE OF COKE, AND THE EXTRACTION OF WASTE PRODUCTS IN THE PROCESS.—The coke trade and the manufacture of the article in Durham is a very important business, and it has been carried on for a great number of years. It was discovered at a very early date that some coal in Durham was peculiarly suitable for the manufacture of coke, and, previously to the development of railways, coke was made for use in breweries, &c. For several years after the railways were opened coke was used exclusively for locomotives, and this gave a great impetus to the trade; but gradually raw coke has been substituted for coke for locomotives, and coke is now mainly used for smelting iron and other processes in the iron manufacture. In early times, and up to a recent date, coke was manufactured in a very rude manner—the raw coal was put into the ovens as it was brought out of the mine, and the charge drawn when coked, this process entailing a large amount of hand labour. In late years great improvements have been carried out. In many cases the coal is reduced to powder by machinery and the ovens charged at the top, small wagons being run on tramways on the top of the ovens. At the Browney Collieries Mr. Hailes's patent has been introduced, which process removes the coke when drawn from the ovens by means of belts into the trucks, these belts being worked by machinery. In many cases the heat from the ovens is utilised being carried by means of flues under the steam-boilers at the works, and all the steam required for the works is raised in this way. The next step in advance is the question of utilising the volatile products of coal as they are evolved in the process of coke making. Two or three systems have been in use during the last few years with some measure of success; but a newly invented process, which is expected to achieve greater success, has been lately brought out. This process is the invention of Mr. Jameson, a Newcastle engineer. This process is in operation at several coke-ovens at the works of

Messrs. Pattinson, at Felling-on-Tyne. By this system Mr. Jameson aims at drawing off gases and vapours at the bottom of the ovens, pipes being inserted for that purpose, which terminate in condensing pipes placed in a trench a few yards from the ovens. A small fan will provide sufficient suction power to draw off those products. The object aimed at is to extract such valuable elements of the charge as may be taken without advisedly affecting the market value of the coke. The suction is so managed as to cause no actual passage of air through the charge. The most important products at present obtained from this process are mineral oil and ammonia. Very unexpected and curious results have already been obtained by the experiments made at these ovens with Mr. Jameson's arrangement. Various kinds of Durham and Northumberland coals have been experimented upon, and it has been found that Northumberland small coals, which had never before been coked, not only produced valuable coke, but also valuable oil and ammonia. It may, therefore be fairly assumed that important results will be effected by this new process. The cost of providing the apparatus for each oven is about 20*l*.

TRADE IN SOUTH WALES.

Dec. 7.—The shipments of coal at the principal South Wales ports exhibit a lower range once more in consequence of the adverse weather. Cardiff sent away 99,402 tons foreign and 24,851 coastwise; Newport, 25,101 tons foreign and 17,140 coastwise; Swansea, 15,223 tons foreign and 10,902 coastwise. The weather this week is more settled, and the arrivals and departures of ships are more frequent. Good colliery screened may be quoted at 11s. per ton, while other qualities range from 9s. 3d. to 11s. 6d. Patent fuel has been sent away from Swansea to the extent of 7512 tons, while Cardiff has exported only 2664 tons and 1000 tons of coke. It will be in the recollection of your readers that Mr. S. W. Kelly, of The Elms, Cardiff, was accidentally killed in his own colliery a few months ago. The colliery, which yields only a second-rate coal, was sold by auction by Mr. George Alexander, at the Royal Hotel, Cardiff, on Saturday. The property, situated in the Rhondda Valley, comprises the Abergorky seam of coal, under part of Glynmoch Uchaf Farm, and contains 81 acres, held under a lease from the Earl of Dunraven for the term of 60 years from May 1, 1870, subject to a royalty of 8d. per ton of 2,520 lbs. upon coal, a surface rent of 2*l*. 10s. per annum, and a dead rent of 25*l*. per quarter, with a way-leave of 1d. per ton upon all foreign minerals conveyed over the lands leased. The colliery had been successfully worked (by level) for several years, but still contained an area of about 35 acres of unworked coal, the whole of which was believed to be at the rise of the level. The vein of coal is 3 ft. 4 in. thick, of a hard nature, and makes, it is stated, but a small proportion of small coal, and the openings already made are sufficient for an output of 100 tons per day. After some fair bidding the property was knocked down to Mr. Howel Jones, Cefn, Merthyr, for 1600*l*.

The Grangetown Tinworks, covering an area of six acres of ground, was sold by auction last week for 100*l*. There was no reserve price, and, therefore, Mr. Gibbs, of Cardiff, obtained what must be pronounced a bargain. He intends to set the works going at an early date. The other ironworks in the district are well employed. The make of steel is very large. Newport sent away some large parcels of iron last week, including 2265 tons to Melbourne, 1500 to Boston, 1280 to Aarhuus, and 385 to Barranquilla; Cardiff only exported one parcel of 485 tons. Iron ore is arriving in satisfactory quantities. Newport received 16,966 tons from Bilbao, and 1440 tons from other places; Cardiff 12,628 tons from Bilbao, and 3211 tons from other places. The price of Camparil Somorrostro is 15s. 6d.; good Rubio, 15s. 3d. per ton.

The failure is announced of Messrs. Townshend, Wood, and Co., tin-plate manufacturers, of Swansea and Briton Ferry, with liabilities to the extent of 350,000*l*. Coke-mades are being sold as low as 15s. per box at Liverpool, entailing a loss of 2s. per box, while 16s. is the highest price quoted. There is a blank future for this trade unless adequate prices can be maintained either by a lessened make or a total suspension of works for a time.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Dec. 7.—A good idea of the variety and extent of the mineral resources of Wales, together with their associated industries, may be obtained in an observant journey around the Welsh coast from Chester to Cardiff. If my readers do not object to such a journey in winter, with pleasant stopping places on the way, I will ask them to accompany me by easy stages. We start from the general railway station, Chester, which is in itself an important rendezvous for mining men. If I thought they would not be offended I should like to give a friendly sketch of them some day as I have seen them there. We travel by the London and North-Western line towards Holyhead, and at a distance of about 1½ mile we come to the busy little port of Saltney, on the Dee. I remember when there was no port there, and within my memory it has gradually superseded the port of Chester, a little higher up the river. The Great Western Railway have here a network of sidings, and great facilities for loading and unloading coal, and unloading the red iron ore which comes here from the north-west of England and the north-east of Ireland.

Our line runs alongside the estuary of the River Dee, and we immediately come to the Chester Chemical Works, devoted, I believe, more especially to the production of sulphuric acid from pyrites. Then we pass the old established chemical manure works of Messrs. Proctor and Rylands, with their trim lodge and neatly kept entrance. These are followed by rather extensive works belonging to the Dee Oil and Candle Company, and the Dee Oil Company, works which have resulted from the adaptability of the Cannel and oleaginous shales of the adjoining Flintshire coal field for the production of paraffin and its products. Next we come to the great slate depôt, nearly half a mile long, at which are stored ready for sale slates, green, purple, red, and blue, spotted and striped, from the Carnarvonshire Slate Quarries, the work of loading and unloading which goes on all day and every day. A little further on by the riverside we see the Sandycroft Foundry, famous for its production of mining machinery in connection with the renowned firm of John Taylor and Sons.

Very soon we cross the siding leading to the Aston Colliery, the property of the Premier, whose home at Hawarden is discernible on the wooded ridge to the left. This colliery and brickworks is the advanced outpost of the group of similar works, whose chimneys, forest-like, rise on Buckley Mountain further on on the same side. Aston Colliery is famed for the production of an evenly coloured yellow brick, which we shall see has been largely used at the seaside resorts further on, and in the newer buildings of Carnarvon. It is made from one of the lower clays of the coal measures. The dull red bricks of Buckley Mountain are made from the thick shales and clays above the middle coal beds; but some of the finest bricks and the pottery for which the mountain is known are made from the clays underlying the coal seams. Chemistry again in the Connah's Quay Alkali Works, followed by Connah's Quay itself. If I might digress etymologically I should say this ought to be spelt Cynnah, and that it has been corrupted into the rather Irish-looking name of Connah. However, it is a busy little port, where you can generally count 20 or 30 ships. It is becoming the chief port of the Dee. The quay is lined with loaded coal-wagons, hematite iron ore is lying about in long heaps, Norway poles for pit props abound. I have an affection for these Norway poles. Probably I have seen them standing straight and verdant in their native forests; carried on sleighs in the deep snow of winter to the ice-bound port, ready for shipment in the spring or to the river-side. I have watched them floating down their long river voyage; pitching, tossing, and eddying down great waterfalls, and gathered at last into great floes of timber, acres in extent, at the head of a fjord or in the still waters of a lake, and here they are with their last glimpse of daylight before they are buried underground. Chemistry again follows in the extensive works of Smith and Mawdsley, and as we reach the town of Flint, in the still more extensive works of the Messrs. Musprat, a name well known in industrial chemistry. We have travelled only 12 miles, but we have seen a great deal, and without any reflection on the good cheer of Flint we will retrace our steps and rest for the night at the hostelry at Queen's Ferry.

The slate quarries and collieries are in good work; so are the lime and stone quarries. Lead mines, as usual, are suffering from lowness of prices. The question of the pollution of the River Severn by the Van Mine was before the Conservators last week, when it was said that a satisfactory arrangement would be come to.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

Dec. 7.—There has not been much change in the state of affairs in Derbyshire during the week so far, at least, as trade is concerned, and but little is heard with respect to the limitation of the production of coal, which is now the leading feature on the programme of the miners' leaders. At the present time such a proposal would not be entertained, as the men are endeavouring to earn as much as possible for the Christmas holidays. Indeed, having received an advance of wages, the men are not likely to submit to a reduction by working five days a week instead of six, even were mineowners willing to allow them to do so. But should such be attempted there is no doubt a struggle of no ordinary kind would take place, for it would be a fight as to whether the representatives of the men should have the power handed over to them of working the collieries as they pleased or not, the only liberty allowed the owners being to provide the wages required by the workmen. In several papers during the week it is stated that a movement is on foot on the part of employers to reduce wages, consequent on the falling off in the demand for coal, owing to the heavy stocks held by merchants, owing to the purchases made in October in anticipation of a strike; but, from enquiries made, there appears to be little, if indeed any, foundation for this statement. Lately there has certainly been a falling off in the demand for house coal, and the London market in particular has been rather over-stocked; but the marked change which has taken place in the weather during the last few days will be the means of greater activity in the demand. Some of the collieries in Derbyshire are by no means so busy as they have been; but now a change for the better may be expected. The Clay Cross Company have been sending a considerable tonnage to the Metropolis, the stoppage of the pit where the explosion took place apparently making but little, if any, difference to the company. A good deal of coal has also been sent to London from Blackwell, Eckington, Grassmoor, and Langley Mill. Steam coal has been in but moderate request, although, perhaps, rather more is being done for the railway companies for stocking for the holidays, when the consumption is usually increased, and the miners are not at work. Engine coal has been going off tolerably well, but the quantity sent away is less than what it was in October. Gas coal is, of course, in greater request; but this makes no difference to the colliery owners, seeing that the price was fixed in summer, when the contracts were made. The iron trade is in a fairly healthy state, there being a full average make of pig, especially at the Staveley, Stanton, and Sheepbridge works. Manufactured iron is also in tolerably good request, and the foundries are kept steadily going.

In Sheffield business is now brisker than ever, and in several departments the men are making a good deal of overtime, and will continue to do so for the next fortnight. There has been more than ordinary activity in the production of steel-faced armour-plates, and a large order has just been received from the Russian Government for a new type of vessel, of which several are to be made on the same lines. It is, therefore, evident that Brown and Cammell's will have a busy time of it for the next year or two, for the orders in hand will extend over the latter period. Bessemer makers continue busy, there being a good demand for billets for certain descriptions of cutlery and tools, whilst a large quantity is still required for the rail mills. Crucible steel is also in good request, a heavy tonnage being required for castings, mining tools, and other material. Springs, tyres, and axles are also in brisk demand as are saws, files, and edge tools. Of late there has been a fair output of fine malleable castings, which are produced as regards finish, sharpness, and appearance, equal to steel—Messrs. Crowley and Co., having the highest reputation for this class of work, and who of late years have also introduced several important specialities in the shape of light horticultural and agricultural implements. The cutlery houses are now working late and early, there being extensive orders in hand for the home as well as the colonial markets. Not quite so much of late has been done with America, but there is every reason to believe that the new year will open out well as far as trade with that country is concerned. The engine-works and foundries have been working well. Indeed trade in the town all round is good, and the closing week of the year, which may be said to end on the 23rd inst., promises to be much brisker than has been the case for several years past.

In South Yorkshire the Coal Trade has been tolerably brisk, but prices are still considerably below what they should be after the advance of the men's wages. To London the business has not been so good as might be expected, and merchants are unwilling to give the prices they paid a couple of months ago when a strike was anticipated. Less has also been done in steam coal for exportation, especially from Grimsby. A large quantity of coke is being sent away into Lincolnshire and Staffordshire, as well as into other districts. The Dodsworth and Silkstone Colliery, one of the largest in the West Riding, after standing about 18 months, and going through the Chancery ordeal, is now about to be opened out, so that there will be work before long for some 700 or 800 miners at this important mine, where three seams of coal have been worked.

THE COAL FIELDS OF SOUTH AFRICA.—Attention having recently been directed to the valuable coal deposits of South Africa by Sir Bartle Frere, it appears that the importance of the matter has been fully recognised by the Government; and it is now understood that Prof. Green, M.A., of the Yorkshire College of Science, has been appointed by the Colonial Secretary to go out to that country. He will be empowered to visit various districts where the coal deposits are supposed to extend, report upon their value, and suggest the best means for bringing their contents into the market. The carbonaceous deposits along the eastern as well as other districts of the Cape of Good Hope have been long known to exist, but have not been proved so far. In another portion of the same continent the late Dr. Livingstone drew attention to the coal that was found, and estimated the beneficial effects upon the future navigation of the Zambesi likely to be exerted by the existence of these "stones that burn," such being the designation of the natives to the coal. There is certainly no man better qualified for such a task as the exploring of such an extensive coal field as that of South Africa, seeing that, having for many years been engaged on the Government Survey, he made the coal fields of Yorkshire a speciality, tracing on the map the different seams as well as the faults, so that it has been of incalculable value to the property and mine owners of the West Riding. As professor of geology in the West Riding Science College he has made the students well acquainted with the coal measures of the district by paying visits to the different collieries. The working of coal in South Africa would be of the greatest possible importance to the inhabitants of the Cape, but would be perhaps even more valuable to the steam vessels going there, both mercantile and national, seeing that the coal required for them would not have to be imported from England, as is the case at the present time. The result of the labours of Professor Green in the new fields traced out for him will be looked forward to with a great deal of interest, not only by those interested in the material progress of our colonies, but by the mercantile and general public as well.

STOCK EXCHANGE YEAR-BOOK FOR 1883.—A glance through the ninth annual edition of Mr. Thos. Skinner's admirable year book can leave no doubt the care and labour which have secured so high a reputation for the previous editions have been in no degree relaxed. The volume, which is published by Messrs. Cassell, Petter, and Galpin, of Belle Sauvage-yard, this year extends to more than 450 pages, and contains a full account of Government Securities, home, colonial, and foreign; railways, banks, insurance companies, lighting and water companies, and companies engaged in connection with mining, iron, coal, steel, land, investment, finance, discount, tramway and omnibus, telegraph and telephone, dock, canal, and shipping, rolling stock, tea and coffee plantations, and various other industries. There is a retrospective sketch for the closing year given by way of preface, and various memoranda are given which render the book very valuable for the desk or counting-house. The corrections appear to have been made up to the moment of going to press, for even winding-up orders made at the end of November are duly noted

THE COAL TRADE.

Mr. J. R. Scott, the Registrar of the London Coal Market, has published the following statistics of imports and exports of coals into and from the port and district of London, by sea, railway, and canal, during November, 1882:—

IMPORTS.

By Sea.	Ships.	Tons.
Newcastle	192	200,096
Sunderland	121	111,463
Seaham	13	7,608
Hartlepool	40	16,054
Middlesborough	3	1,434
Blyth	—	—
Scotch	15	6,608
Welsh	18	18,852
Yorkshire	22	3,815
Cumberland	—	—
Small coal	11	3,757
Cinders	2	418
Culm	—	—
Total	437	370,105
Imports—Nov, 1881.	499	378,015

By Railway and Canal.	Tons	cwt.
Lond. & North-Western	147,325	12
Great Northern	94,340	0
Great Western	93,898	16
Midland	199,750	0
Great Eastern	63,350	0
South-Western	5,562	5
London, Chat., & Dover	—	—
London, Til., & South.	—	—
South-Eastern	2,200	4
London, Brighton, &c.	—	—
Grand Junction Canal	716	15
Total	607,083	12
Imports—Nov., 1881	676,996	0

Comparative Statement, 1881 *and* 1882.

By Sea.	Ships.	Tons.
Jan. 1 to Nov. 30, 1882.	4602	3,461,394
Jan. 1 to Nov. 30, 1881.	4609	3,368,212
Decrease—1882	7	In. 93,182

By Railway and Canal.	Tons	cwt
Jan. 1 to Nov. 30, 1881	6,135,603	17
Jan. 1 to Nov. 30, 1882	5,940,167	8
Decrease—1882	195,436	9

EXPORTS.

Railway-borne coal passing "in transitu" through district ...Tons		105,622
Sea-borne coal exported to British Possessions, or to foreign parts, or to the coast	75,004	
Ditto sent beyond limits by railway	21,488	
Ditto by canal and inland navigation	2,254	= 98,746
Railway-borne coal exported to British Possessions, or to foreign parts, or the coast	32,005	
Ditto by rail beyond district	46	
Ditto, by canal and inland navigation	143	= 32,199
Sea-borne coal brought into port, & exported in same ships		49
Total quantity of coal conveyed beyond limits of coal duty district during November, 1882		236,616
Ditto, during November, 1881		259,491

Comparative Statement, 1881 *and* 1882.

Total distribution of coal from Jan. 1 to Nov. 30, 1881	2,467,676
Total distribution of coal from Jan. 1 to Nov. 30, 1882	2,441,148
Decrease in the present year	26,528

General Statement, 1881 *and* 1882.

Decrease in coals imported by railway	195,436	
Less increase in coals imported by sea	93,182	= 102,254
Less decrease in coals exported		26,528
Total decrease in trade within the London district		75,726

THE COPPER TRADE.

Messrs. HENRY R. MERTON and Co. (Leadenhall-street, Nov. 30) issue the following Statistics of Copper:—

Stocks in Europe:—	
Chili bars, Liverpool and Swansea ...Tons	20,971
Chili ingots, Liverpool and Swansea	213
Chili ores and regulus, Liverpool and Swansea (fine)	8,337
Other furnace stuff, Liverpool and Swansea (fine)	4,389
London, Foreign copper (chiefly Australian) and Landing	5,267
Chili bars, ingots and Barilla in Havre	2,926
Other copper in Havre	190
Afloat, and chartered from Chili to Europe (advised by mail):	
Ores and regulus (fine)	2,087
Bars and ingots	5,852
By cable, ores and regulus (fine)	250
Bars and ingots	2,300
Afloat from Australia to Europe (advised by mail):	
Fine copper	477
By cable: Fine copper	1,271
Total	48,529

Price of Chili bars, 66*l*. 5s. per ton.

Messrs. RICHARDSON and Co. (Dec. 1) write: The stock of Chili copper produce remaining unsold at Swansea on Nov. 1 was:—Ore, 226 tons; since arrived, 408 tons; regulus, 3540 tons, since arrived, 1638 tons, since sold, 724 tons; copper, 6739 tons, since arrived, 300 tons; since sold, 75 tons. The present stocks are:—Chili, ore, 634 tons; regulus, 4454 tons; copper, 7014 tons; Cape, ore, 4403 tons; New, Quebrada, ore, 5373 tons; Newfoundland, Betts Cove, ore, 1063 tons; regulus, 62 tons; Tilt Cove, ore, 1116 tons; Portuguese, precipitate, 41 tons; Spanish, ore, 110 tons; regulus, 244 tons; precipitate, 1500 tons; British, ore, 245 tons; total unsold at Swansea, ore, 12,944 tons; regulus, 4760 tons; copper, 7014 tons; precipitate, 1541 tons. Representing about 12,440 tons fine copper. The only private sale during the month has been 450 tons Cape ore at 14s. Chili charters for the month are 1750 tons in bars and ingots, and 400 tons of fine copper in ores and regulus for England, and 550 tons in bars and ingots for the Continent, making 36,179 tons for the 11 months. The market has had a downward tendency during the last month, but closes somewhat firmer.

THE TIN TRADE.

Messrs. STRAUSS and Co. (London, Nov. 30) issue the following Statistics of Tin:—

	Oct. 31, 1882.	Nov. 30, 1882.	Nov. 30, 1881.
Straits and Australian, spot.....Tons	4,913	4,300	4,957
,, ,, landing	45	1,183	563
Straits, afloat	1,550	478	894
Australian afloat	1,681	1,783	1,825
Banca, on warrants	940	1,288	1,163
Billiton, spot	1,841	1,736	928
,, afloat	1,064	1,128	1,100
Australian tin in Holland	11	5	—
Stocks in America, including quantity afloat	3,750	3,510	2,900
Total	15,795	15,413	14,325
Prices of Straits and Australian	£100 0	£97 15	£ 105
Deliveries during month in London	1,244	1,652	1,531
,, ,, ,, Holland	663	584	621
Total	1,907	2,236	2,152

Shipments during the month from Straits to London 75 tons, from Australia to London 1000 tons, from Straits to America 575 tons, from Australia to America *nil*. Banca in Trading Company's hands and afloat, 1911 tons.

Messrs. EBELING and HAVELAAR (Rotterdam, Dec. 1) write:—There was no improvement in our tin market at the beginning of this month, the quantity for sale remaining large, and buyers confining their operations within a very limited compass. A decline of another 2 fl. at last brought about a better, demand, which further increased when the large London deliveries for the first half of the month became known. Light shipments being at the same time reported from the East, the ground lost was speedily recovered, both consumers and speculators buying readily at the enhanced prices. The tone has since been pretty firm, the daily demand being a most regular one. Prices at the close show a decline of ¼ fl. compared with our quotations ruling at the end of October. The Dutch Trading Company's last sale took place this day, when 22,843 slabs Banca were sold from 59½ fl. to 59¾ fl., average 59⅝. The next sale will be held towards the end of January, 1883. In Banca the supply has been scarce, holders as a rule, showing great reluctance to part with their tin at present prices. From 60½ fl. we declined to 59½ fl., subsequently advaning to 60¼. Our quotation is 59½ fl. with buyers.

The position of Banca tin in Holland on Nov. 30 according to the Official Returns of the Dutch Trading Company, was—

	1882.	1881.	1880
Import in November ...Slabs	6,000	13,000	8,630
Total eleven months	138,477	128,437	115,418
Deliveries in November	11,700	9,389	8,250
Total eleven months	122,278	139,566	116,668
Stock second hand	41,203	37,222	46,496
Unsold Stock	61,161	46,678	41,218
Total stock	102,364	83,900	89,714
Afloat...Peculs	—	15,600	2,700
Statement of Billiton:—			
Import in November ...Slabs	3,800	2,500	6,150
Total eleven months	103,242	88,146	115,471
Deliveries in November	7,099	10,050	17,291
Total eleven months	80,687	110,933	119,940
Stock	55,621	29,527	52,785
Afloat (including to-day's sale)...Peculs	15,000	19,000	12,000
Quotation, Dec. 1—Banca	59¼ fl.	64 fl.	58½ fl.
Billiton	59 fl.	63¾ fl.	56 fl.

These combined returns of Banca and Billiton for 1882, compared with those for 1881, exhibit—A decrease of the import for November of 178 tons; an increase of the import for the eleven months of 942 tons; a decrease of the deliveries for Nov. of 20 tons; a decrease of the deliveries for the eleven months of 1485 t on

an increase of the stock second-hand of 940 tons; an increase of the unsold stock of 453 tons; an increase of the total stock of 1392 tons; a decline of the quotation of Banca of 7*l.* 6*s.* per ton.

The Government Returns for the month of September are as follows:—

EXPORT OF TIN FROM HOLLAND.

	September.			Nine Months.		
	1882.	1881.	1880.	1882.	1881.	1880.
To Germany .....Tons	219	251	324	2590	2733	2554
England	1	10	37	66	323	1082
Belgium	65	131	123	714	1421	2008
France	15	17	79	290	407	520
Hamburg	23	39	53	371	493	589
The United States ...	3	27	—	70	96	363
Other countries.....	53	52	58	363	600	550
Total.....	379	527	679	4424	6078	7671

IRON, COPPER, AND TIN-PLATES.—Messrs. FRENCH and SMITH (Dec. 7) write:—With regard to iron unfavourable news from America in connection with the manufacturing trade in that country has had a depressing effect here. On the other hand, our manufacturers are fairly well supplied with orders, and stocks of raw material are steadily decreasing. Copper smelters being well supplied with furnace stuff, and the shipping demand for manufactured continuing very slack, the deliveries during the past month were small; and, although supplies were moderate, stocks show an increase. Value of Chili bars declined from 69*l.* to 65*l.* 10*s.*, closing with a better tone at 66*l.* Charters from the West Coast were advised for the first half of November, 1300 tons; second half, 1400 tons. Some second-hand parcels of coke tin-plates offering on the market have depressed prices, but makers generally hold for higher rates than can now be obtained. The exports for January to October, ten months, were by the Board of Trade Returns:—224,326 tons in 1882, against 198,664 tons in 1881, and 180,382 tons in 1880.

COPPER AND TIN.—Messrs. HENRY ROGERS, SONS, and Co. (Dec. 7) write:—A heavy fall in value has taken place since our last, Chili bars having receded from 69*s.* 10*d.* to 66*s.* Prices are, no doubt, now approaching a safer level; but, in the interests of general trade, a further decline may, perhaps be necessary. The Birmingham consumers would probably recommence buying at 70*s.* for best selected, and the Indian demand would revive with sheets quoted at 72*s.*, or thereabouts. With smelters' works again fully occupied a rise in value would be warranted and sustained; but it is doubtful whether the lower basis of prices now prevailing for the various forms of manufactured have reached the point at which the two large markets referred to will be induced to supply their wants. It will be seen in our figures below that our stocks have increased during November, and as the December deliveries are always moderate on account of the holidays, figures cannot be expected to be very favourable this month. If, as is probable, the deliveries of the first three months of 1883 are smaller than recent figures, the increase in imports and decrease in exports, already so noticeable, will be further intensified. It will be seen below that at present they show an adverse balance as against last year of 11,000 tons. Messrs. P. H. Muntz's yellow metal sheathing has been reduced to 6¾*d.* per lb. The tin market has been most unsettled throughout the month, and numerous fluctuations have occurred. The failure of a large English house who have always operated in tin and of an American firm interested in the article have further depressed a sensitive market. London deliveries have been large, totalling 1652 tons, while the shipments to London from the Straits and Australia have been variously announced at 1075 and 1225. The total visible supply of the world on Nov. 30, 1882, is stated to have been some 1100 tons larger than at the same date last year, but 382 tons less than on Oct. 31.

SOUTH STAFFORDSHIRE AND EAST WORCESTERSHIRE INSTITUTE OF MINING ENGINEERS.

The usual monthly meeting of members was held at the Mining Museum, Dudley, on Monday,—Mr. W. FARNWORTH, the President, in the chair, and Mr. HENRY JOHNSON, jun., occupied the vice-chair. There were also present, among others, Mr. Henry Johnson, sen., Mr. C. H. Tregloun, Mr. John Hughes, Mr. R. Latham, Mr. J. M. Fellows, Mr. A. Sopwith, Mr. J. F. Addenbrooke, Mr. W. H. Whitehouse, Mr. Stephen Watkins, Mr. W. J. Hayward, and Mr. Alexander Smith, M.I.C.E., secretary.

The minutes of the previous meeting were read and confirmed.

The discussion upon the papers read at the last meeting by Mr. Arthur Sopwith and Mr. C. H. Tregloun upon the "Lime Process of Getting Coal," and the "Wilson Gas Producer" respectively, was then taken up. It was ultimately resolved to adjourn the discussion until further experiments had been made in both cases, the authors to report to the Institute the results.

Mr. HENRY JOHNSON, sen., then read the following paper, entitled "Some Remarks on the Proposed Channel Tunnel between Dover and Calais," in connection with his visit thereto:—It will be in the recollection of the members of this Institute that on Oct. 16 Sir Edward Watkin, Bart., M.P., Chairman of the South-Eastern Railway Company, kindly invited the members of the North of England Institute of Mining and Mechanical Engineers to visit the tunnel on the 18th ult. About 150 members accepted the invitation. To the very great credit of the different railway companies the party were granted free passes from all parts of the kingdom. The latter assembled at Charing Cross Station at 9 o'clock on the morning of the day named, and were conducted by Sir E. Watkin and other officials, proceeding by special train to the tunnel works on the coast near Dover, were they were met by Mr. Francis Brady, engineer of the works, and Colonel Beaumont, R.E. Nearly the whole of the party descended the shaft, which is 160 ft. deep, and proceeded to inspect the trial heading, which is 7 ft. diameter, and driven in for a distance of 2800 yards. The heading is driven in what is known as the great chalk, which is impervious to water, and contains few, if any, flints.

The trial heading is driven seawards to below low water mark, at a fall of about 1 in 80, and with the exception of a little weeping here and there it may be said to be practically dry and free from water. The site of the shaft is at the foot of Shakespear's Cliff, close to the sea, between Folkestone and Dover, and within a few yards of the South Eastern Railway, from which a siding is made on the tunnel works. The direction of the Dover headway is towards the end of the Admiralty Pier at Dover. The present trial headway is worked by a powerful compressed air-engine under the direction of Col. Beaumont and Capt. English, it having rotating arms fixed on a disc in front, with numerous cutters attached, and requires two men only to work it. It was stated the machine would cut and load into tubs one yard for the whole diameter of driving per hour night and day, but Mr. Tilden Wright puts it down at 40 yards per day. The boring machine was worked by compressed air generated at the surface, with a pressure of 20 lbs. at the machine, and fed by a 4 in. pipe; the pressure at the surface being about 30 lbs. A small portable compressed air-engine, intended for hauling underground, weighing altogether about 6 tons, made by Col. Beaumont, was exhibited at work hauling debris at the surface, preparatory to being sent below to do the hauling in the 7 ft. trial head. It did its work admirably, and readily took in its supply of air at 1000 lbs. pressure to the square inch. The strata through which the trial heading passes stands perfectly without timbering, and does not appear to slack by contact with the atmosphere, but rather to indurate and harden. The exhaust air is utilised for ventilation and seems very satisfactory. Swann's incandescent electric lamp is adopted to light the workings, and apparently is perfection itself, both in effect and from a sanitary point of view.

The pit-shaft passed through 40 ft. of loose debris from the cliff, then white chalk impervious to water, and at 100 ft. below sea level the present heading is driven in the great chalk, which is free from water. The length of the proposed tunnel from the English to the French shore is 22 miles, with 4 miles of short approaches on both sides, making a total length of about 30 miles. It is also proposed for the shore approaches to dip at 1 in 80, and the main tunnel shall not necessarily be straight or at any particular gradient, but in such lines and gradients as the great chalk lies. This chalk, which is about 145 ft. thick, lies between the upper white chalk, pervious to water, and the gault and greenstone below, which also yield water. On our visit we were informed the French had driven from their side 580 yards, and that the character of the strata was improving as they proceeded. Mr. Tilden Wright suggests two 14 ft. tunnels, instead of one 24 ft. diameter. I think practical men would be in favour of Mr. Wright's suggestion, whatever size the two may be reduced to, as the driving and ventilation would be thereby materially facilitated. It is proposed to have about 50 yards of covering between the top of the tunnel and the bottom of the Channel. It is also proposed to work the tunnel traffic, when completed, with Beaumont and English's compressed air locomotive engines, similar to those worked on the Stratford and Leytonstone branch of the North Metropolitan Tramways. These engines will carry 1200 cubic feet of compressed air, at a pressure of 70 atmospheres, or rather more than 1000 lbs. to the square inch.

Colonel Beaumont estimates that the tunnel may be bored at the rate of three miles per annum from each end, occupying in the whole only 3½ years to complete it. In dealing with this subject I am indebted to much information obtained from Prof. Boyd Dawkin, of Owen's College, Manchester, and Mr. Tilden-Wright. The latter I see is publishing an exhaustive paper on the subject, read before the North of England Mining Institute. As to the insecurity of this little island from an invasion of the French by reason of the tunnel does not come within the practice of mining engineers, and is to me too ridiculous to waste any observations upon. I think a sufficient negative answer would be obtained from Sir Garnet Wolseley, or any other great military stratagist, if he were asked how he would take France from our side the tunnel. I think Colonel Beaumont gives a sufficient answer to all alarmists when he advises the following conditions as security to be observed:—1. The mouth of the tunnel to be outside the fortifications of Dover, and under fire of its guns.—3. The entrance to the tunnel, whether by lift or incline gallery, to be under command of fire from the sea.—The works to be capable of being flooded or otherwise stopped from a point within the fortifications.

There was a general expression of opinion amongst the practical and scientific visitors that there were no great difficulties present to a speedy, successful, and economical completion of the tunnel as compared with railway tunnelling generally.

After the inspection of the tunnel and works, the visitors were hospitably entertained at the Lord Warden Hotel, Dover, with Sir E. Watkin in the chair, supported by Mr. J. Cowan, M.P., and Mr. B. Foster, and other eminent gentlemen, and returned to London in the evening by special train, all evidently delighted with the interesting visit.

A vote of thanks was accorded Mr. Johnson for his paper.

MANCHESTER GEOLOGICAL SOCIETY.

The ordinary monthly meeting of members was held on Tuesday, at Manchester,—Mr. JOHN AITKEN, the President, in the chair.

THE MEASUREMENT OF AIR CURRENTS IN MINES.

The discussion on a paper read at the previous meeting by Mr. Joseph Thompson on "The Measurement of Air Currents in Mines," of which an abstract has already been given in these columns, was resumed.

Mr. THOMPSON, after summarising briefly the points raised in his paper, said the subject was one which ought to receive careful attention, and he did not think any difficulty would be found in applying the arrangement which he proposed for measuring and recording the quantity of air passing through a mine.

Mr. DICKINSON, Her Majesty's Chief Inspector of Mines, did not know that he could add anything to the discussion beyond what he had already set forth in a paper he had read before the society; but he would ask Mr. Thompson in what respect his system differed from an arrangement proposed by Mr. Hall, or from that brought out by the late Mr. Peace.

Mr. THOMPSON said he had not had an opportunity of seeing the arrangement brought out by Mr. Hall, but if Mr. Hall adopted the principle of the telephone he thought it would entail some expense, as the telephone companies would take action in the matter. The system brought out by Mr. Peace was a very ingenious arrangement, but it depended in its action on a cone hanging in the shaft, which was liable to become loaded with dust, which caused it to indicate abnormally. It was also further affected by the rushing past of the cages in the shaft.

Mr. SEDDON said he had formed an opinion since hearing the paper read that the arrangement proposed by Mr. Thompson was a very ingenious combination of the principles of electricity, and also of the meteorological system, of observing the speed of the wind, and, judging from what they already knew of the action of the two in their separate conditions, he had come to the conclusion that the combined arrangement was possible, desirable, and practicable, so far as most large mines were concerned. Mr. Thompson's idea had not yet been practically carried into effect, and until this was done it was necessarily to some extent a theory, but it was a theory which was possible of practical application. The chief difficulty which occurred to him was that in whatever part of the mine it might be placed there would be a certain amount of dust, and as with an instrument of the description proposed, involving very delicate mechanism, might retard its action, or render frequent cleaning necessary, and colliery people in mines were scarcely the sort of people to entrust with the overhauling of a very delicate instrument. The carrying out of the system might also lead to a little bit of laziness on the part of colliery officials, who would be enabled to observe the action of the ventilation in their offices instead of in the mine, which was desirable should also be done. These, however, were objections which would not, he thought, stand in the way of the application of the system, which seemed to present a means of carrying out its object with a scientific accuracy he had not observed in any other system up to the present.

Mr. WILD, of the Bardsley Collieries, Ashton, said that for many years they had had in use at their pits an anemometer consisting of a wood float. This was a flat board about ⅛ in. thick and 1 ft. square, hung by a light wooden rod about 3 ft. in length, and by a string passing over a small pulley carrying a pointer, which moved up or down the face of a board marked with a graduated scale, the number of cubic feet of air passing through the mine was indicated. This float had been found to answer very well for all practical purposes.

Mr. SEDDON added that since Mr. Thompson's paper had been read he was so much struck with the proposed system that he had made enquiries as to the working of the Robinson's cups in use at Southport, and he had found there that the mechanism was liable to oxidation from the action of the salt air and sand, and this had raised the doubt in his mind as to the action of the dust in the mine on the apparatus.

Mr. EVANS (Middleton) said that a few months ago he had made experiments with a Byrom anemometer in a similar manner as that proposed by Mr. Thompson. He thought it was possible that the system might be so arranged, with governors, to register a partial stoppage of air. There was the objection to the system which would arise from the action of the dust in the mine, as the slightest film of dirt would interfere with the operation of the electric current.

Mr. J. S. MARTIN, Inspector of Mines, suggested that in carrying out the proposed system the instrument ought to be distributed over various parts of the mine in the workings. It was more important to know what was going on in the workings than what was going down the shaft. The quantity of air going down the shaft might be very large, but what they wanted to know was how it was distributed through the various workings.

Mr. SEDDON thought the apparatus would be capable of being placed in various parts of the mine.

Mr. THOMPSON, in replying upon the discussion, said he had designed the apparatus, so that the whole of the mechanism could be enclosed in a dust-proof box, which might be made air-tight if necessary. The question of introducing governors, as had been suggested, was a point which had occurred to his mind, but he had not seen how it could be brought into actual practice. It was a very important point if they could make an instrument which would give an alarm when the air stopped, but if governors were attached some resistance would necessarily be given, and how far that would interfere with the efficiency of the cups he was not in a position to say. With the arrangements he had introduced for the protection of the mechanism it would not matter in what position it was placed in the mine, as it was now made dust-proof.

Mr. SEDDON said the introduction of the dust-proof box answered all the objections he had to raise to the apparatus.

THE OCCURRENCE OF MANGANESE AND HEMATITE IN THE OLD RED SANDSTONE OF DENBIGHSHIRE.

Mr. C. E. DE RANCE, of the Geological Survey of England and Wales, read a paper "On the Occurrence of Manganese and Hematite in the Old Red Sandstone near Abergele, Denbighshire." He said the Geological Survey map of Flintshire and Denbighshire showed that the base of the carboniferous limestone did not always rest directly upon the various underlying beds of the Silurian age, but was occasionally supported by a deposit of Old Red Sandstone. The question arose what relation in age of deposition had the iron occurring at the bottom of the carboniferous limestone to that occurring at the top of that formation in the Furness district, in South Wales, and in Somersetshire, and was the iron ore occurring disseminated through the Old Red, or basement beds, a contemporaneous deposit, or was it due to subsequent infiltration? To these questions an answer was, he thought, in some degree furnished by a very interesting section that had been opened out by the Abergele Hematite Company at Nant Uchaf, in Denbighshire. The mine was situate on the lowest beds of the Old Red, or the basement of the carboniferous, and the depth of the workings was limited by the presence of the Denbigh flags of Silurian age, the dip of which was being followed seawards as far as the boundary of the mining property would allow. Immediately below the shaft to the south was the outcrop of the Silurian rocks; a little way up the hill northwards was the base of the carboniferous, which probably attained a thickness of 1000 ft., and the total thickness of the Old Red was about 300 ft. Good examples of ironstones had been passed through in the shaft, and masses of conglomerate occurred, associated with thick deposits of red hematite, iron ore, and manganese, which appeared to have been deposited by water percolating from above, and in many cases to have entirely replaced the limestone originally occupying the site; solid masses of manganese and hematite following the dips of the strata with all the regularity of the bedded rocks which they had replaced. These ore deposits varied in thickness from 6 to 20 ft., and were overlaid by a thick bedded gritty limestone. Beneath the ore deposit was a thin bed of dark red sandstone, lying immediately on the Silurian flag floor, the surface of which was extremely irregular, and appeared to be water-worn, channels filled with ore deposit being separated by ridges of the Denbighshire grit, over which the thickness of the ore was much reduced. The No. 1 shaft was nearest the outcrop of the basement beds, and was 400 ft. above the Ordnance datum, and was 15 yards in depth. It was carried entirely through the basement beds that went down to the Silurian, which he was informed had been bored into for a depth of 15 yards, but no ore had been discovered. The red hematite had been worked here some time ago, and a considerable quantity obtained, following the dip to the No. 2 shaft, which was 40 yards in depth and 80 yards distant. Nothing, however, was known at the time of the existence of manganese, nor was its presence ascertained when the present management first commenced. Its hard and compact character recommended it as a suitable road material, and 6 inches deep of it was spread over the lane connecting the mine with the high road. Shortly afterwards the attention of Major Wright, of Bagillt, was drawn to the material, and on an analysis he found it to be composed principally of manganese ore containing 60 per cent. of metallic manganese, and a small proportion of hematite. The thickness of the deposit averaged 9 feet, varying from 7 in. to 7 ft., and it rested upon the hematite, which decreased in thickness as the manganese increased, the united ore deposit remaining about the same, the maximum being 17 ft., and the minimum 6 ft. When he (Mr. De Rance) examined the district in June of the present year he found that shafts then deserted had been sunk to the iron ore higher up the hill by previous explorers, and it struck him that here also the manganese ore probably formed the roof, and had been left through ignorance of its character. This he had been informed had proved to be the case. The evidence afforded by the two mines proved the existence of furrows in the Silurian floor, which had been filled up with ore, hematite below and manganese above, deposited from the water percolating through the upper portion of the basement bed. In conclusion, Mr. De Rance, in summing up the facts connected with the important discovery at the Abergele Mine, said it was probable that the finding of rich deposits of manganese in the above locality would lead to its being found in some of the very numerous localities along the Welsh border, where the same conditions prevailed, which would be of great value considering the present demand for manganese for the manufacture of Bessemer steel by the Spiegeliesen process. That the source of this ore deposit was the basement beds themselves, the metal being concentrated by the percolation of water downwards until arrested by the impermiable floor beneath. That the hematite iron ores of the Lake district might have had a similar origin. That the iron ore lying on the surface of the carboniferous limestone in South Wales, Somerset, and in the Furness area had a distinct origin, and were derived from the Permian and Red Rock, and that the cobalt in the Rhyl district belonged to the last set of conditions.

A vote of thanks having been passed to Mr. De Rance for his paper,

The CHAIRMAN said that questions of considerable importance had been opened out. The explanation of the derivation of the hematite ores in Lancashire had been a puzzle to a great many. It had been contended by some that they had been produced by chemical combinations, whilst others urged that they were of volcanic origin. To his mind none of these explanations were perfectly satisfactory, and although Mr. De Rance had suggested a new theory he did not think that this could be accepted as a solution of the difficulty. It was impossible to imagine that this ore could have been absorbed in such quantities in the water and carried into these fissures. How the iron got there was still a puzzle, but he was sure they would have been glad to hear the opinion of so distinguished a geologist as Mr. De Rance upon the subject.

Mr. STIRRUP said he had been extremely interested with the paper, because it had always been a great puzzle as to where these ores had been derived from. The formation of iron ore did not belong to any one age; it could be found at almost any period. The opinion which Mr. De Rance had given seemed to him to contain a great deal of truth.

Mr. DICKINSON said he had given a great deal of attention to the subject, and thought all the evidence showed that the formation of the ore had been a slow process; that there had been a gradual change going on in the mass of material, and that it had not been brought about by a sudden volcanic eruption.

Mr. DE RANCE, in replying upon the discussion, said it appeared that the origin of the iron ores in the Lake district was due to different conditions than in the Furness district. The origin of the Lake district ores was the Old Red Sandstone, and in the Furness district the ores were derived from the percolation of the Permian rocks.——The proceedings then closed.

IMPORTANCE OF DRAWING IN DEEP MINES.

In the course of the discussion which followed the reading before the Mining Institute of Cornwall of Capt. Bishop's paper on the importance of drawing in deep mines, published in last week's Journal, the President, Mr. W. HUSBAND, C.E., said that without doubt, winding was a very important question, and also that of filling. Of course, they could not compare their winding machinery in metalliferous mines with that of collieries—that was quite impossible. No doubt the old shafts made by the "old men," following the ore wherever they found it, had left a legacy of difficulty for the present men. With regard to their winding-engines he thought very great improvements might be made. He recollected many years ago in Carn Brea Mine they used to break their chains very often, and, at his advice, some cog-wheels were put into the winding-engine, and this effected a very great improvement, and the chains ceased to break as they had hitherto done. He did not know that it would be advisable to wind with cog-wheels, but if they were to adopt in their mines for winding-engines what was called the compound engine—that was two cylinders, one lying alongside of the other, one with high-pressure steam and the other low-pressure steam, and using high-pressure steam in the boiler at a high rate of expansion, he had no doubt they would save 50 per cent. in the fuel now used. This had been shown in the case of marine engines, where the consumption was 2 lbs. to the indicated horse-power, whereas it was nearly 6 lbs. in their winding-engines. Of course, they used the best coal for marine engines. These compound engines were very easily handled, and they would have great control as to stoppage.

The great practical value of the paper was specially noticed by Capt. Teague, jun., who added that he thought Capt. Bishop had hit the right nail on the head with regard to the arrangements for the supply of the skip with the stuff. The delay was not from winding-up, but in filling and landing. The whim very often appeared to be idle in different mines, and that was caused through want of proper arrangements underground for filling the skip. Of course, they

had great obstacles to contend with in the underlie and crooked shafts; but, at the same time, the filling of the stuff was a much greater obstacle. He would also confirm the remark in reference to the rolls, and he was glad to hear what had fallen from the Chairman in reference to the compound engine. With regard to the multiplying wheels, his opinion was that the less wheels they had the better. He thought if a smaller drum were used it would be a great advantage. Mr. R. H. Williams quite agreed with Capt. Bishop that in their winding there was something wrong, and that a resolution should begin with the winding-engine.

The practicability of rapid drawing was referred to by Capt. Daddow, who stated that hoppers had been put in at Carn Brea Mine, and they could draw 100 tons a day from one hopper. He believed there was great advantage in drawing in this way. The great impediment to their drawing was the working of their skip-roads, but the fact was they did not lay them out. They found them too narrow. If the roads had been laid 2½ ft. wide they could draw the stuff from the skips three times as fast as they did now. He believed it was possible to put a skip-road in an underlie shaft, and have a whim to travel 30 miles an hour. If properly plated they could drive as fast as a locomotive, and bring up as much stuff as they felt disposed to do. There was a great deal of time and money lost in the present system of drawing. Capt. Teague, jun., said it was very important to have a ladder-way by the side of the skip-road in case of repairs being wanted. Capt. Charles Thomas did not know any department of Cornish mining that had been improved more than their winding. He compared what it was at Cook's Kitchen 26 years ago and what it was now. Then the kibbles fetched up 5 cwts only. At present the cost of bringing up the stuff was about 11½d. per ton, so that on 1000 tons a month it cost them 20*l*. a month more than East Pool, and they were drawing 120 fms. deeper. He did not, therefore, think that winding was so very important a matter now. The various points raised having been replied to by Capt. Bishop, the thanks of the meeting were unanimously voted to him for his excellent paper, and a cordial vote of thanks to the President terminated the proceedings.

Meetings of Public Companies.

COLORADO UNITED MINING COMPANY.

An extraordinary general meeting of shareholders was held at St. Michell's Hall, George-yard, Lombard-street, on Monday,

Mr. W. Fraser Rae in the chair.

Mr. Norris (the secretary) read the notice, which stated that the meeting was called by requisition "to elect one or more additional directors; to make such alterations in the Articles of Association as may be necessary for that purpose," and "to resolve that monthly accounts of the working expenses and sales of produce be supplied to the shareholders."

Mr. A. J. Smyth asked that the letters sent by Mr. Ward from the mine to the directors should be read. These would give the shareholders some information on matters which were to brought before them.

The Chairman said it was his duty to preside over the meeting, and, if possible, to keep order. (Hear, hear.) In accordance with that duty he would proceed to do what was always done at such meetings—to make a statement to the shareholders who had been summoned together. It would be known to some if not to all those present that somewhat unexpectedly, since their general meeting in the month of August, changes had taken place with regard to this company. One of these changes was that their late secretary (Mr. Andrews) resigned his office, his resignation being due to the fact that he had a more important place to fill, and it became necessary to appoint a successor. They were fortunate in securing the services of Mr. Norris, who he was sure would discharge his duties to the satisfaction alike of the shareholders and the directors, while the change would have the very desirable result, considering the financial position of the company, of reducing the expenses to the extent of about 100*l*. per annum. Almost simultaneously with the resignation of Mr. Andrews, the shareholders or some of them were asked to attend a meeting summoned to discuss the state of the company. That meeting, judging from the public prints, took place on Oct. 2. It was a meeting summoned by a shareholder, and every shareholder had a right to call such a meeting if he thought fit, and if he could get other shareholders to attend it. As a matter of fact the board took no part, nor could they take any part at such a meeting. At the same time they issued to the shareholders some pieces of information which they thought would be of service to them, to the effect that not only had they lost the services of their late secretary, and stating what had been done in consequence of Mr. Andrews' resignation; and they stated, not in answer to, but in explanation of a circular sent out by one of the shareholders, that many of the statements in that circular were exaggerated, and if relied upon would mislead the shareholders.—[Mr. Smyth: That is not so.]—At the meeting statements were made, according to the full report which he had in his hand, which were even more open to question than those contained in the circular issued in anticipation of it.

Mr. Smyth called for Mr. Ward's letters, and asked that they should be read. (Cries of "Order."—Mr. Aston agreed with Mr. Smyth that Mr. Ward's letters should be laid before the meeting.—Mr. Bladon rose to order, and suggested that the Chairman should finish his speech, and then they could have the letters read.

The Chairman resuming, said that when the meeting took place he was unavoidably absent on the other side of the Atlantic, and he had intended visiting the property of this company, which might have conduced to some extent to the interests of the company, as he would have been able to give the shareholders some information derived from personal observation; but hearing that the meeting to which he had been referring had been held, and that the board had been requested to convene the meeting which they were now holding, he felt it his duty, holding the responsible and honourable position which he did, to return to this country earlier than he would otherwise have done without visiting the property as he had intended. Possibly the company might have lost something from his inability to visit the mine, because it was important that a board should have as much personal information as possible with regard to the property which they had to deal with; that they should not take all the information at secondhand, or trust entirely to reports, but that the members of the board itself should themselves ascertain what is going on and see and judge for themselves, so as to be able to tell the shareholders the facts connected with their property. He had paid three visits to the property, and General Feilding, his colleague, had visited it once, and they had put the shareholders in possession of absolutely authentic information with regard to the state of affairs out there. However, he would not go into this matter. At the meeting some very uncomplimentary things were said about the directors. They were "damned with faint praise"—they were said to be utterly foolish and weak men, and there were many things said which, he thought, were not in accordance with fact. However, with regard to the requisition which had been made to the directors, the board had no desire to object to or to oppose anything which the shareholders wished to have carried out, but it struck them as being very curious that while in the month of August a special resolution should be unanimously carried reducing the number of the board from eight to five, thus effecting a reduction in the cost of conducting the company, in the month of October the shareholders should wish to change that state of things and to add to the expenses, altering the whole thing before it had had six months' trial. According to the Articles of Association they were only bound to meet once a year, but the directors had undertaken, at the request of the shareholders, to summon half yearly meetings, and according to this promise a meeting would be held early in February, and it seemed to them that at that meeting any suggested change could be fairly discussed, six months then having elapsed since the alterations to which he had referred were made. The board had done nothing which had not had the fullest assent and approval of the shareholders in general meeting assembled. They had opposed nothing which the shareholders desired to have done, and the board were always ready to make any changes that the shareholders desired to have made. What appeared to lie at the bottom of a great deal of this movement was that some of the shareholders objected strongly to Mr. Hamill being the managing director of the company in Colorado, on the ground that he was not dealing fairly by the company. (Hear, hear.) This he need not say was a very serious accusation, an accusation so serious that if it were true it would be a disgrace to any board to allow Mr. Hamill to remain in occupation of such a post, and it would be a disgrace to this company to have such a managing director if the things stated, which he was told were believed by some of the shareholders in August, were well-founded. But the charges were brought forward somewhat late.

Mr. Smyth: They had not the evidence they have now.

The Chairman said the directors were called upon to replace Mr. Hamill on certain statements and allegations without he or anybody else being requested to give any explanation or meet the charges made. In point of fact, they were asked to deal that justice which would hang a man first and then try him. (Cheers.) He thought no gentleman in the City of London would really wish to condemn Mr. Hamill untried and unheard. (Hear, hear.) The directors were told that they could not cope with this "astute American," but, as a matter of fact, and it might be a recommendation to some of them, Mr. Hamill was an Englishman, having been born and trained in Liverpool. He emigrated to America and fought in the Civil War. He had made a large fortune, and he was the largest shareholder in this company. He (the Chairman) had made it his personal and special object to obtain all the information possible with regard to Mr. Hamill's antecedents and his present condition, and he knew more about him personally, and about his management of the mine than many people were likely to know. In his capacity as representative of the Times he had been three times to Colorado, and he had had many opportunities of obtaining information, and Mr. Hamill's friends and enemies, for he had both, and who agreed that in regard to this property no man had managed it so well or so honestly, and no man had promised to make it pay so soon or so largely as he had done. This was the opinion which he (the Chairman) had formed. He had very good ground for that opinion, which he still held; but if the shareholders desired an investigation into matters in Colorado or at home the directors would not oppose any such investigation. (Cheers.) Probably Mr. Hamill had not done certain things so well as he ought to have done them; but, he had had great difficulties to contend with. With regard to the statements in Mr. Smyth's circular as to the value of the stopes; he wished they were true, but having seen the stopes, he found little or nothing in them. The property was rich in parts, but to value the mine according to the value of a small piece of it was to put forward a most misleading statement. If the mine were all equal to certain parts of it, its value would be incalculable; but, unfortunately, it was not so, nor was it so rich as it was in 1873. When the mine was discovered, an extremely rich deposit was found at surface; but though very good ore had continued, and though they were now working a good vein, it was not of the same richness as at the surface. They were now making a very fair profit, and since the last general meeting they had cleared about 2000*l*. in net profits. He hoped, if the shareholders would allow them, that they would pay a dividend within a short time; but, of course, if the company was to be broken up, the dividend would be postponed, if they ever had one. He asked for the directors a fair opportunity of conducting the affairs of the company. They had been found fault with for not issuing proxies on this occasion. They did not issue proxies because at a meeting which the board had with Mr. Smyth at his own request on Wednesday week, they told him precisely what they intended and desired to do, and they informed him that they did not contemplate issuing proxies, the board understanding at the same time that Mr. Smyth would not issue proxies either. Mr. Smyth had, however, stolen a march upon them; but he thought they might rely with some confidence on receiving that fair play which was characteristic of Englishmen. It would be unfair to determine a matter of this kind with proxies on one side only. (Hear, hear.) The Chairman then read a letter which the board had received from Mr. Arthur asking for an enquiry into the manner in which the shares were inflated by the reports on the mines, and also asking as to some share transactions; as to the aggregate holding of the directors, irrespective of Mr. Hamill, and also as to the holdings of the gentlemen conspicuous in their objection to the management of the directors—Messrs. Bladon, Smyth, and Aston.

Mr. Aston said his holding was 1056 shares.

Mr. Bladon had no objection to tell the meeting his holding, but suggested that any shareholder who desired the information could go and see the register without writing to the board on the subject. He had a right to speak, whether he held five or 5000 shares.

Mr. Smyth observed that the holdings of himself and his friends had nothing to do with the questions under discussion.

The Chairman replied that he had already deprecated the raising of personal matters. The board desired to give the fullest information in their power, but the question of holding was one which the shareholders could inform themselves upon. As to having an enquiry, the board would be guided entirely by the feeling of the meeting. He did not wish to reply to the question asked as to the holdings of any gentleman. As to the feeling of the board, they did not desire to take any part in the discussion, but they would listen attentively and patiently. He would suggest, however, that the whole discussion should be postponed until the semi-annual meeting, which would be held in February. They would then come to the matter fairly and freshly, and in the meantime they would do all they could to be able to lay things before the shareholders more clearly than they could now.

Mr. Smyth said they were utterly unable to come to a decision without the facts. Therefore, he asked that the letters from Mr. Ward, which he had seen at the office, should be read by the secretary. Mr. Ward was well-known to many gentlemen in the City of London, and was appointed by the directors, after due examination into his character. He was sent to Colorado to keep and make up the accounts, which Mr. Hamil had never furnished properly. He moved that Mr. Ward's letters be read.

Mr. Bladon, in seconding the proposition, said he supported the directors at the last meeting because he thought they should have a fair chance, but they had recalled the very man in whom the shareholders had confidence. They had had at the mine a man who had dared to do his duty. (Hear, hear.) They could no longer tolerate that Mr. Hamill should be the irresponsible manager out there. Mr. Hamill gave them no accounts, nor allowed them to have any check by which they could see whether they were being fairly treated, and the only reason he could see for the removal of Mr. Ward was that he had been a check upon Mr. Hamill. (Cheers.) Two years ago the directors were hopeful that they would have a period of brilliant results, but these results had not come yet, and they would still be led on if they submitted to this state of things any longer. (Cheers.) What they required was proper accounts from the mine.

Mr. Smyth: You have been slaves long enough. Free yourselves from this bondage at once.

The Chairman pointed out that under article 98 of the Articles of Association the board were not obliged to produce any documents, but this question involved a long series of correspondence. This could be seen by any of the shareholders, but the letters were at the office, and could not be produced at the meeting, which was convened for a specific purpose.

Mr. Fitch asked what reason there was why the letters should not be read?—The Chairman replied that the letters were not there. No notice had been given that the letters would be required. Any shareholder could go to the office and see the letters.

Mr. Fitch, having remarked that he was an original holder of 610 shares, said a great suspicion attached to the Chairman on account of his refusal to produce these letters. (Cheers.) He was not one of the suspicious persons, but—and he said it with pain—he had heard it insinuated that the Chairman was too intimate with Mr. Hamill and disguised things from him. The Chairman defended Mr. Hamill before he was attacked, and made matters more difficult by refusing to produce the letters which had been asked for.

Mr. Smyth denied that the statements in his circular were incorrect, and he moved that the letters be sent for, or, failing that, that the Chairman resign, and that the largest English shareholder, Mr. Thomas Wardell, of Burton, take his place. Mr. Smyth added that he held the votes of 24,000 shares.—Mr. Aston seconded the motion.

Mr. Montefiore moved as an amendment that, in accordance with article 62, a poll be taken on the question that had been submitted to the meeting. He thought it was not in consonance with their duty to make this agitation, and to come to a blind resolution in a few minutes. To come to such a decision would be most unjust and unfair. He suggested that the meeting should be adjourned until February next.

Mr Buckler seconded the amendment, with which was embodied the proposition that the meeting should stand adjourned until a date to be fixed, not later than February next.

Mr. H. Labouchere, M.P., said he had almost forgotten that he held any shares in the company, until the literature he had lately received had reminded him of the fact. He had no prejudice in favour of either party, and what he wanted was a dividend upon his shares. (Hear, hear.) As far as he had gathered from the literature which had been circulated certain allegations were made by Mr. Smyth and his friends. (He (the speaker) had no means of judging whether these allegations were right or wrong. They had had no reply from the directors, who, he understood, had not asked for proxies, owing to some sort of arrangement between them and Mr. Smyth.—Mr. Smyth: No such arrangement was made.

The Chairman: It was an understanding.—Mr. Labouchere: I am reciting what I have heard. You (the board) understood that as an arrangement.

Mr. Smyth: They have proxies for the 16,000 shares which Mr. Hamill holds.

Mr. Labouchere added that it was only common sense to suppose that the man who held a third of the mine would do his best to make it valuable. He knew nothing of Mr. Hamill; but as they had gone on muddling from year to year, he thought they should not be in such a hurry now, and, he, therefore, supported the suggestion that the meeting should be adjourned. They would then have the opportunity of receiving from the directors a clear and specific statement, with whatever statement or explanation Mr. Hamill might have to offer. He did not care one sixpence for Mr. Hamill; but it seemed to him that it was in the interest of a man holding a third of the mine to make it valuable if he could. It would hardly be fair to absent shareholders to decide such a matter with only one side of the case stated. (Hear, hear.)

Mr. Smyth repeated his request that Mr. Ward's letters should be read.—The Chairman replied that the letters were not there. The board would have strained a point and had them there if they had been asked for. As to his leaving the chair, he should only do that by closing the meeting, and he hoped the shareholders would support him in preserving order, and in deciding that Mr. Smith's proposition could not be entertained. (Hear, hear.) If the proposition for adjournment were adopted he assured the meeting that everything should be fairly, fully, and truthfully placed before them. (Hear, hear.) The directors had nothing to conceal. They had held nothing back, and they had allowed every shareholder to see whatever letters they wished to see, although they were not obliged to do so. (Hear, hear.)

Mr. Aston: Is it not a fact that when this little trouble was brewing you sent over for Mr. Hamill's proxy for his 16,000 shares?—The Chairman: It is not a fact.

Mr. Aston: Is it a fact that you told Mr. Andrews, the late secretary, not to show any letters from the other side?—The Chairman: It is not a fact.

Mr. Aston said he had been in the habit of seeing the letters; but calling at the office one day he was informed that instructions had been given not to show the letters.

Mr. Bladon asked Mr. Smyth if he would state the effect of Mr. Ward's letters?—Mr. Smyth said they stated that ore was sent to the smelters without being weighed first; there was no proper account kept of the value received for the tribute ores, and the lode was systematically undervalued. The excuse for not weighing the ore was that they had no scales.

Mr. Bladon added that there was a general undercurrent running through the letters to the effect that the mine was a very valuable one, if worked in the interests of the shareholders, and that it should yield productive results.

Mr. Arthur thought the shareholders should look with a certain amount of suspicion on letters written by a discharged servant.

Mr. Smyth said the letters were written before Mr. Ward left the company's service.

Mr. Arthur understood that Mr. Ward was sent out to furnish a regular statement of accounts, but he proved quite incapable, and he was very properly dismissed. As to not seeing the letters, he thought the directors would have done quite right in refusing to show letters when the information was simply required for stock-jobbing purposes, and not to benefit the company.

In the course of some further conversation, Mr. Aston suggested that an engineer of known respectability should be sent over to examine the mine and the accounts.

General Feilding (a director) said he was waiting for replies to two or three questions before he formed a judgment with regard to Mr. Hamill, but it was very important to the *bona fide* shareholders not to give way to this pressure from the Stock Exchange, nor any agitation got up for Stock jobbing purposes. The charges brought against Mr. Hamill should be formulated, as also should those against the directors, and they would then be able to defend themselves. The directors could have registered Mr. Hamill's proxy, which was a general power and not obtained as had been suggested for this meeting, but they had not done so, as they considered that to simply outvote the shareholders would be an unfair way of dealing with the charges. (Cheers.) They had a report, within the last few days, showing that substantial profits were being made, and he thought it would be a great mistake to call upon them to make any statement prior to the half-yearly meeting in February. (Cheers.)

The Chairman having reiterated the remarks of General Feilding with regard to Mr. Hamill's proxy, said the Board would undertake to make every possible endeavour to lay before the shareholders at the very earliest period the whole facts of the case which would throw any light on the matters in dispute. (Cheers.) There seemed to have been a misunderstanding as to proxies, and, therefore, it would scarcely be fair to use them on one side only. (Hear, hear.) To say that accounts were not sent over was a pure fiction. They had full accounts up to the end of September. The Chairman then referred to the difficulties which they had had in getting a good accountant, stating that Mr. Ward had sent over accounts which were incorrect that he had left the company's service, as other accountants—one or two of them friends or connections of Mr. Hamill or the late Chairman had done before him. The present accountant had been in the London office of the company for four years, and in the three weeks he had been there, upto the latest advices, he had done more than his predecessor in as many months. In future they would have accounts regularly and properly sent. Mr. Ward was probably a good accountant, but he did not keep the books in the English manner which Mr. Hamill, as a good bookkeeper, required. The reason why monthly statements had not been sent to the shareholders—over 600 in number—was on the score of expense. For the same reason the directors had taken no fees since 1876, and they had voluntarily reduced the amount due to them by more than half. (Cheers.)

The proposition made by Mr. Montefiore for adjourning the meeting until a date in February, to be fixed by the board, was then put and carried.

Mr. Smyth said he would demand a poll, but the meeting broke up without the demand being formulated.

Mr. Aston said he would have the mine inspected at his own expense if he could get the opportunity.

The Chairman replied that the directors would give any engineer selected an introduction, and he would be allowed to see everything.—The proceedings then closed.

LAKE SUPERIOR NATIVE COPPER COMPANY.

An extraordinary general meeting was held at St. Michael's Hall, George-yard, Lombard-street, on Tuesday,

Mr. W. Fraser Rae in the chair.

Mr. Daniel Norris (the secretary) read the notice convening the meeting.

The Chairman said the business which they had met to consider and perform was to a very large extent formal if not technical. The resolution he had to propose was:—"That article 35 be and is hereby cancelled and expunged from the Articles of Association." If any shareholder present desired to have the article read he would read it.—A Shareholder: I should like to hear it. The Chairman read the article, and said it was like many other Articles of Association, containing legal phrases somewhat long and apparently involved, and not very clear to those who had not had a legal training. The gist of it, however, was that if any member commenced certain proceedings against the directors, the directors might, in revenge for those proceedings, as it were, forfeit his shares. This was a provision which could scarcely be enforced if they tried, and had crept into the Articles by an oversight. The reason for expunging it was a practical and an important one. They were desirous, as all companies were, of having their shares officially quoted on the list of the Stock Exchange, as an official quotation gave a sort of *imprimatur*, or stamp of respectability, and, therefore, added to the value of the shares by making them more negotiable. An informal application had been made to the Committee of the Stock Exchange, and, in reference to this matter, they were specially indebted to one of their colleagues, Mr. Ingall, himself a distinguished and highly respected member of the Stock Exchange, and an ex-member of the committee of that institution. Mr. Ingall had taken great trouble in this matter, and they had every reason to believe that if this Article were expunged the quotation for which they sought would be granted. The Chairman then moved the resolution stated above.—Mr. Edmund Pontifex seconded the motion, which was carried *nem dss.*

The Chairman stated that it would be necessary to confirm the resolution not later than a month hence, and a meeting would be called at the offices of the company to do what was required.

The Secretary then read the notice convening the ordinary meeting.

The Chairman said it became his pleasant duty to do something which was not of a purely formal character, but to recount to them his experience during his last visit to Canada, and to inform them what he was fortunate to do whilst there. At their last general meeting he stated that amongst other things they hoped to acquire a special charter. He did not then state the reasons which prompted the board to desire a special charter, because he was anxious not to excite a feeling in their minds of doubt with regard to their property, or as to their title; but, as a matter of fact, their title was, to some extent, he would not say in jeopardy, but certain doubts might arise with regard to its being in perfect form and order. Although when the company was constituted everything was done by the solicitors that was thought necessary, it was overlooked that some changes had taken place of a very important character in the Dominion of Canada. By an Imperial statute passed in 1867 by the Parliament of the United Kingdom, there was conferred upon the provinces the Dominion of Canada (constituted into a dominion by that Act), the sole and exclusive power of dealing with the public lands in each province. This company's property was situated in the Province of Ontario, which had legislated in 1880 with regard to the public lands of that state. By this legislation it was enacted that no alien company—and he was sorry to say they happened to be an alien company, even in Canada—should acquire or dispose of land, unless by virtue of a special charter from the Lieutenant-Governor in Council. When he (the Chairman) visited their property in the spring, he found they had no such special charter, and he thought it was an essential thing that they should acquire one, if possible. But having arrived at that conclusion after a good deal of investigation, he found it very difficult to do what was wanted, because this company had been acting, so to speak, in defiance of the legislation of the Province of Ontario. The case was a somewhat serious one, but they were fortunate enough to obtain the assistance of a very eminent firm of solicitors in Toronto, who did everything that could be done. He (the Chairman) had the good fortune to know the Lieutenant-Governor personally, and to be acquainted also with the Prime Minister, and Attorney-General of the Dominion, and the Commissioner of Crown lands, and other important officials in the Dominion, and he was, therefore, able to make a stronger appeal than if he had been a stranger. They entertained his appeal, he was glad to say, and stretched a point in so doing. His efforts were crowned with success, and he had the pleasure of bringing with him to England, within the last fortnight or three weeks, a special charter in perfect form. (Cheers.) Another matter which occurred to the board was one worthy of consideration—the question of the tax they had to pay on machinery imported into Canada. They were rendering a very great service to the Dominion, but, on the other hand, they were called upon to pay large sums of money in the shape of a very heavy duty on articles sent into the Dominion. These were imposed for the purpose of encouraging native industry, but the articles they imported were for the most part not made in Canada. Everything they could get in Canada they would, of course buy there, thus saving the heavy expense of sending them from this country. Nevertheless, there were certain articles of machinery required which were not produced in Canada, and the duties imposed were, therefore, a fine on a very important industry which they were introducing into Canada. He had presented a memorial to the Minister of Finance, Sir Leonard Tilley, and had sent a copy of it to the Prime Minister at Ottawa, asking that the amount which they had paid in this way—something like 1000*l*.—should be returned to them. This had not yet been done, but he had had a very pleasant acknowledgment of the memorial, and he thought it not impossible that they should succeed in getting some drawback, which would be so much in favour of the company. He had also paid a great deal of attention to the subject of the deficient roads. From Sault Sainte Marie for a distance of 30 miles they had no other means of communication with Lake Superior, except during the winter, than a trail through the Bush for two-thirds of the distance, and an embryo road for the other third. Of course, the company could make a road; but he did not consider they would be dealing fairly with the shareholders' money in doing so. He had communicated with the Commissioner of Crown Lands of Ontario on the matter, and he had received a satisfactory promise that the Government would do what they could in the matter. If they made the road required, it would not only facilitate transport, but it would open up a large part of their land for settlement. With regard to their mining arrangements, he had found it painfully necessary to make some changes in the management of the property. The mine had been specially well managed under the superintendence of Mr. E. D. Ingall, the gentleman who went out as a pioneer of the industry there, and had remained ever since, and to whose energy and zeal the company was largely indebted. Mr. E. D. Ingall's health had, however, broken down under the arduous labours which had been imposed upon him, and this fact, coupled with the prospect of his obtaining a more advantageous appointment, had induced Mr. Ingall to resign, and the board had been very reluctantly compelled to accept his resignation. At the same time they passed a minute thanking him for his services, and expressing the hope that his health would be restored. (Hear, hear.) He had felt bound to call upon Capt. Mitchell to resign, having satisfied himself that though Capt. Mitchell was an extremely able man he had some drawbacks which prevented his being altogether the man for the place. Another official had also been requested to resign, and his notice would soon expire. The directors had been very fortunate in securing the services of Capt. Zachariah Williams, who had had large experience in mining, and had been trained under the care of his father, a miner of great ability, who was for over six years at the head of the Cape Copper Mines. Capt. Zachariah Williams had been employed by Messrs. John Taylor and Sons—a firm they all knew and respected—for many years as an inspector, and had for some years been mining in Canada. The owners of the mine in which he had been recently engaged had determined to close it during the winter, and Capt. Williams was for the time being out of employment. His services would be of especial value to the company, as he was thoroughly capable to conduct mining operations in Canada, which was a very important fact. They had not yet received a detailed report from Capt. Williams, but they had received a letter from him, dated Nov. 14, saying that things were looking very promising, and that he would send a full report together with a working plan shortly. As to the property itself, they had one very large lode—No. 20 lode—which they had developed to a considerable extent. Since the last general meeting a report had been made on the property by Capt. Opie, of the Michipicoten Native Copper Company, and this report had been circulated among the shareholders. Capt. Opie recommended that certain things should be done by the diamond drill in order to test the permanency of the lode. This had been done since, and the holes which had been made for a space of over ¾ of a mile had proved the continuance of the lode in length and in depth. The lode was about 10 ft. wide at surface, and to the depth of the 80 ft. sunk it improved in character. Capt. Opie also strongly recommended that the No. 17 lode should be tested. Drill-holes had, therefore, been made to a depth of 60 ft., and the lode had been proved to be 14 ft. wide, full of native copper all the way through. Of course, they could not tell what more there might be. The ore was on its way to this country and they would then be able to test its value. The results of operations on the two lodes, they were led to expect, would be of a character which ought to please all ordinary expectations. The Chairman then read an independent testimony with regard to the value of the property which he had received from a Mr. Walker, who, with a friend, had spent two days on the property recently. Mr. Walker, who is not a shareholder in the company, expressed the opinion that the mine was an exceedingly rich one, and that its richness would increase in depth. The ore at surface he calculated at 1000 tons, which proved that the shafts must have been sunk in ore all the way. [Several specimens of ore and native copper were on the table.] The Chairman said Mr. Stuart, the managing director, h sent a de-

tailed report, stating that the machinery had all been safely landed at the mine, that everything was in good order, and that arrangements for the winter were completed. He had found upon enquiry that the office at Montreal was no longer necessary, and from the close of the year it would be closed, and the business of the company would be transacted here and at the mines. (Cheers.) By this and other changes he had had the good fortune to effect a saving of about 1000*l.* per annum in the expenses of the company. (Cheers.) With regard to the question of authorising the creation and issue of 10,000 additional shares, the shareholders would not now be asked to sanction the acquiring of the property referred to—the Kincaid location, which joined their property; but as such an acquisition might be of considerable value to them hereafter, the board desired to be able to negociate in the matter. He had had some difficulty in obtaining the assent of the vendors of the Lake Superior property to the creation of these additional shares, as it would have the effect of putting back their deferred shares by that amount. Of course, the board would not acquire this property if it should not clearly be for the benefit of this company that they should do so. In conclusion, the Chairman moved a resolution to the effect that the meeting authorised the creation of 10,000 ordinary shares, to be employed in acquiring, if deemed advisable, an additional tract of mineral land, about five square miles in extent, joining the company's property.

Mr. JEPHSON seconded the resolution.

Mr. BLADON, in supporting the motion, said it was clear that they had a very valuable property, and expressed his deep regret at the resignation of Mr. E. D. Ingall. He urged that, if possible, Mr. Ingall should be asked to reconsider the matter, and that his services should be retained.

Mr. DISMORE endorsed all that had been said with regard to Mr. E. D. Ingall.

The CHAIRMAN, in reply to a question, expressed the hope that the machinery would all be in perfect order by the spring. In reference to Mr. E. D. Ingall, nobody regretted his resignation more than the directors, but it had been necessary to make arrangements for the winter as soon as possible, and these could hardly be altered now. The Chairman added that the labour difficulty was likely to be overcome by the migration of Italian miners, who worked hard, and did not indulge in whisky drinking—a practice which had given the company an immense amount of trouble. He also referred to the employment of rock-drills, which were likely to be very beneficial to the company. The Chairman added that the shares were in large demand in Canada, as well as here.

The motion was carried unanimously.

On the motion of Mr. FORTESCUE HARRISON, seconded by General AGNEW, and supported by Mr. PONTIFEX, a cordial vote of thanks was passed to the Chairman for the great exertions he had used on behalf of the company, and for his two visits to the property, and 500 guineas were voted to him as an acknowledgment of his special services.

The meeting closed with the usual compliments.

Registration of New Companies.

The following joint-stock companies have been duly registered—

THE ZUBIATE MINING COMPANY (LIMITED).—Capital 200,000*l.*, in shares of 10*l.* To purchase or otherwise acquire and work mines, minerals, and mining rights, lands, and hereditaments and chattels in the Province of Sorrora, in the Republic of Mexico, and in particular the Hacienda Zubiate and the Zubiate Mines, near the City of Hermosillo, with the stamp-mill and other buildings erected on the said property, the plant, machinery and other effects belonging to the said mines, and the goodwill thereof, according to an agreement made between R. R. Pealer, of the one part, and the company, of the other. The subscribers (who take one share each) are—J. D. Kennedy, 18, Bedford-road, accountant; H. D. Yates, Croydon, accountant; A. F. Stokes, 5, Birchin-lane, stationer; F. Sloper, 20, King William-street, engineer; A. Wiffen, 31, King William-street, gentleman; J. Whitcomb, Highgate, clerk; W. Davison, Whitehall Club, gent. The subscribers will appoint the first directors, whose number must not be less than three or more than seven. Future directors will have to hold a qualification to the nominal value of 100*l.*

THE NORTH WOOLWICH TELEGRAPH WORKS COMPANY (Limited).—Capital 100,000*l.*, in shares of 10*l.* The business of electricians, engineers, telegraph and telephone instrument makers, &c. The subscribers (who take one share each) are—A. E. Tylor, 2, East India Avenue; W. L. Bright, 5, East India Avenue; J. B. Ball, 1, Gresham Buildings; C. O. Newman, Yeovil; A. T. Atchinson, 38, Parliament-street; C. E. Harrison, Rockhampton; F. W. Smith, 155, Fenchurch-street.

GEORGE TAYLOR AND COMPANY (Limited).—Capital 20,000*l.*, in shares of 10s. To acquire and carry on a business of merchants, manufacturers, and shipowners in Liverpool. The subscribers are—G. Taylor, Liverpool, 500; E. Taylor, Liverpool, 500; B. H. Grindley, Liverpool, 1500; J. Cottam, Manchester, 500; R. Lees, Liverpool, 500; T. Wynne, Liverpool, 500; J. Taylor, Liverpool, 1.

THE LIVERPOOL SHIPPING AGENCY (Limited).—Capital 5,000*l.*, in shares of 1*l.* To acquire by purchase and carry on a business situate at 15, Sweeting-street, Liverpool. The subscribers (who take one share each) are—J. Gilmour, Liverpool; T. H. Sheen, Liverpool; D. E. Jones, Conway; P. S. Levy, Liverpool; H. Edwards, Liverpool; J. Winstanley, Wigan; G. Broadbridge, 4, Rumford-place.

WHINYATES, WEBSTER, MCNAUGHT, AND COMPANY (Limited).—Capital 13,750*l.*, in shares of 5*l.* To acquire and carry on a business in Liverpool of hide, skin, fat, and wool brokers. The subscribers are—J. Whinyates, Liverpool, 50; W. Phillips, Liverpool, 5; T. Webster, Liverpool, 50; J. Ellis, Liverpool, 5; R. Lewis, Liverpool, W. McNaught, Liverpool, 50; S Outram, Liverpool, 5.

THE WEST KIRBY HYDROPATHIC HOTEL COMPANY (Limited).—Capital 12,000*l.*, in shares of 5*l.* To establish and maintain hotel or hotels in the county of Chester. The subscribers are—W. Smedley, Liverpool, 40; W. H. Quilliam, West Kirby, 200; A. Quilliam, Fairfield, 100; J. Looney, Liverpool, 5; H. L. Riley, St. Helen's, 20; J. Riley, St. Helen's, 10; J. Speight, St. Helen's, 2.

THE UNITED STATES CATTLE RANCHE COMPANY (Limited).—Capital 250,000*l.*, in shares of 5*l.* The various operations of a land company, and to deal in, breed, graze, produce and raise, and sell cattle or other animals, and to raise every kind of agricultural produce, &c. The subscribers (who take one share each) are—J. Ware, Hampstead; W. de B. Seagrove, Poplar; J. Tillman, 16, Camden-street; G. L. Wood, 143, Dalston-lane; W. Porter, Bow; W. Worham, Forest Gate; H. B. Dickenson, Peckham.

THE STEAMSHIP "WINCHESTER" COMPANY (Limited).—Capital 38,500*l.*, in shares of 110*l.* Purchasing, owning, and working said vessel. The subscribers (who take one share each) are—A. M. Cohen, Newcastle-on-Tyne; A. R. Newman, Newcastle-on-Tyne; T. McNabb, Newcastle-on-Tyne; J. F. Cohen, 30, Great St. Helen's; W. M. Young, Newcastle-on-Tyne; W. A. Blundell, Newcastle-on-Tyne; S. J. Dale, Newcastle-on-Tyne.

THE NORTH ATLANTIC CABLE COMPANY (Limited).—Capital 600,000*l.*, in shares of 10*l.* The making, laying, and working of submarine and other telegraph lines between Europe and America. The subscribers (who take one share each) are—J. G. Bennett, New York; W. A. Simpson, Hendon; A. T. West, Lewisham; T. W. Powell, 1, Drapers' Gardens; A. H. Clark, 17, Stratford-place; E. Heseltine, 1, Drapers' Gardens; W. Huyshe, 46, Fleet-street.

THE SUGAR LOAF GOLD MINING COMPANY (Limited).—Capital 60,000*l.*, in shares of 5*l.* To adopt and carry into effect an agreement made between H. A. Fergusson, of 7, Westminster Chambers, of the one part, and J. L. A. Hope, of 36, Welbeck-street, and W. M. St. Aubyn, of 1, Brick-court, Temple, as trustees for and on behalf of the company, for the purchase of certain mines and minerals situate in the State of California, and to carry on the various operations connected with the business of mining, quarrying, and dealing in and exporting ore and other mineral substances, amalgamating the ore, and rendering marketable the produce. The subscribers are—J. L. A. Hope, 36, Welbeck-street, gentleman, 20; H. A. Fergusson, 7, Westminster Chambers, M.E., 20; S. B. Coxon, 7, Westminster Chambers, M.E., 20; T. L. Eastlake, 23, Great George-street, gentleman, 20; H. E. Brown, 32, Great George-street, solicitor, 1; J. Baker, Brockley, gentleman; S. Stewart, Clapham, clerk, 1. The number of directors must not be under five or exceed 12. The following are to be the first directors:—The Earl of Hopetown, M. St. Aubyn, S. B. Coxon, J. A. Hope, and J. Coughlin. The vendor or his nominee will join the board after allotment.

THE SPECIAL AGENCY COMPANY (Limited).—Capital 48,000*l.*, in shares of 40*l.* To purchase and continue the business of silk and foreign agents at 30½ Milk-street, Cheapside. The subscribers (who take one share each) are—C. A. Sperati, 5, Mitre-court; C. Sperati, 5, Mitre-court; J. L. Drevon, Saint Chamond; E. M. Broun, Saint Chamond; L. M. Jury, Saint Chamond; R. L. Loffay, Macon; E. Bassi, Napoli.

THE SOUTH DURHAM BREWERY COMPANY (Limited).—Capital 10,000*l.*, in shares of 10*l.* To acquire and carry on an established brewer's and malster's business. The subscribers are—J. Woodard, Leamington, 15; J. Dixon, Skelton, 15; G. G. Woodard, Sowerby, 2; S. Richardson, Darlington, 1; M. Hutchinson, Darlington, 15; W. Hodgson, Darlington, 1; S. A. Dawson, Leamington, 1.

STANDERING AND BURTON (Limited).—Capital 10,000*l.*, in shares of 1*l.* The formation and promotion of the trades of brewers, malsters, wine and spirit merchants, &c., at Selby or elsewhere. The subscribers (who take one share each) are—J. Burton, York; G. A. Buckingham, Selby; J. Morley, Selby; W. N. Jardine, Selby; J. F. Ross, Selby; C. Tinnes, Selby; T. G. Hawdon, Selby.

THE JOINT-STOCK FARMS AND LAND ASSOCIATION (Limited).—Capital 300,000*l.*, in shares of 5*l.* The business in all branches of a land company, including farming, grazing, &c. The subscribers (who take one share each) are—Earl of Huntingdon, Roscrea; G. D. Yeoman, Bedford; J. Hardcastle, Hampstead; C. K. Dyer, St. Albans; W. H. Richards, 36, Mark-lane; J. Speir, 5, Arthur-street; J. Iunes, Canonbury.

THE SOUTH WALES STORING COMPANY (Limited).—Capital 10,000*l.*, in shares of 10*l.* The business of warehousing of tin-plates, and any goods, wares, and merchandise whatsoever. The subscribers (who take one share each) are—R. K. Bousfield, Swansea; R. E. Bill, Swansea; E. Bath, Swansea; R. Copper, Swansea; J. Cady, Swansea; E. C. Goodhart, Swansea; E. H. Bath, Swansea.

THE SPEN VALLEY, DEWSBURY AND DISTRICT TRAMWAYS COMPANY (Limited).—Capital 100,000*l.*, in shares of 5*l.* To construct, equip, maintain, and work certain tramways. The subscribers (who take one share each) are—J. Stead, Heckmondwike; G. Bundey, Heckmondwike; J. S. Cooke, Liversedge; S. Cooke, Liversedge; J. H. Spinney, Heckmondwike; G. S. Bull, Cleckheaton; R. Kelley, Cleckheaton.

ROBERT WHITE AND COMPANY (Limited).—Capital 80,000*l.*, in shares of 5*l.* To carry on a wholesale and manufacturing biscuit, confectionery, and preserve business. The subscribers (who take one share each) are—W. H. Wheeler, Kennington; G. Sanders, Stoke Newington; C. Gripper, Camden-square; J. G. Taylor, 290, Southampton-street; D. S. Campbell, 67, Faraday-street; J. J. Ball, 3, Gairlock-road; G. J. Briggs, Elephant and Castle Repository.

LIVERPOOL CITY ROLLER MILLING COMPANY (Limited).—Capital 25,010*l.*, in shares of 25*l.* and 10*l.* To acquire the city flour mills at Liverpool, and carry on the business connected therewith. The subscribers are—J. Herd, Liverpool, 992; J. Marquis, Liverpool, 1; W. Marquis, Liverpool, 1; J. S. Richardson, Liverpool, 1; J. J. Briscoe, Liverpool, 1; H. E. Williams, Liverpool, 1; W. H. Coates, Liverpool, 1; J. Marquis, Liverpool, 1.

THE NEWFOUNDLAND GUANO COMPANY (Limited).—Capital 25,000*l.*, in shares of 100*l.* The business of manufacturers of fertilisers and manures, the production of oil and other products from fish, seal, &c. The subscribers (who take one share each) are—T. R. Job, Liverpool; R. A. Job, Liverpool; W. Crosfield, Liverpool; C. J. Crosfield, Liverpool; W. Glynn, Liverpool; J. E. Gordon, Liverpool; J. Temple, Liverpool.

SHIP STOCKBRIDGE COMPANY (Limited).—Capital 30,000*l.*, in shares of 100*l.* A shipowner's business in connection with said ship. The subscribers (who take one share each) are—E. B. Hatfield, Liverpool; P. Simpson, Liverpool; T. C. Jones, Liverpool; M. Mark, Liverpool; M. Milman, Liverpool; A. J. Foote, St. Helen's; T. A. Jolliffe, Liverpool.

THE EXPLOSIVE TRADING COMPANY (Limited).—Capital, 10,000*l.*, in shares of 10*l.* Selling and dealing in dynamite and powder, and other explosives. The subscribers (who take one share each) are—E. Cooper, 40A, King William-street; G. W. W. Brogden, 34, Eastcheap; J. Bailey, Paris; H. P. Moorhouse, Paris; C. N. Cicile, Paris; C. Kirch, Luxembourg; C. Crazat, Paris.

THE KRONTHAL MINERAL WATERS COMPANY (Limited).—Capital 100,000*l.*, in shares of 1*l.* To acquire and continue a certain business. The subscribers are—J. F. H. Baker, Clapham, 10; G Dodson, 5, Crosby Hall Chambers, 150; J. Donagan, Swansea, 10; G. Fuller, 9, Austin Friars, 10; T. Kirchen, 7, Wellington-road, 150; A. L. Hutchinson, 4, Guildhall Chambers, 150; C. Steere, 5, Redcliffe-square, 150.

THE ECONOMIC NON-EXPLOSIVE BOILER COMPANY (Limited).—Capital 60,000*l.*, in shares of 5*l.* To manufacture and sell all kinds of boilers and appliances in connection with certain patents. The subscribers (who take one share each) are—R. Jenkin, 25, Bond-street; R. H. Dee, 125, Flackman-road; H. Mason, 49, Peckham-grove; T. Bolton, 28, Percy-street; J. J. Sharland, 55, Hackford-road; S. Pollard, 39, Lombard-street; T. Hakes, 61, Lansdown-road.

THE BATTERSEA PARK LAUNDRY COMPANY (Limited).—Capital 8000*l.*, in shares of 2*l.* To establish and carry on a laundry business in all branches. The subscribers (who take one share each) are—J. T. Axford, Catford; G. T. Cotham, St. John's Vicarage; C. L. Layton, St. John's Vicarage; J. W. Meldrum, 3, Walberwich-street; G. B. Flowerdew, Kensal Green; J. Wilson, North Brixton; E. C. Triggs, Bow.

THE BRITISH ENVELOPE MANUFACTURING COMPANY (Limited).—Capital 60,000*l.*, in shares of 5*l.* The ordinary business of envelope manufacturers and commercial stationers. The subscribers (who take one share each) are—H. W. Irwin, Clerkenwell; H. Pouché, 3, Wilmington-square; H. T. Turner, 106, Vauxhall Bridge-road; W. R. Honcastle, Hackney; H. Mason, 49, Peckham-grove; J. J. Sharland, Brixton; R. Jenkins, Vauxhall.

THE SAINTCLAIR SELF-ACTING STOKER COMPANY (Limited).—Capital 50,000*l.*, in shares of 5*l.* The business of mechanical engineers in connection with certain patents. The subscribers (who take one share each) are—M. Belsham, 52, Queen Victoria-street; W. H. Wigg, 52, Queen Victoria-street; R. Kay, 52, Queen Victoria-street; J. T. Corbin, 52, Queen Victoria-street; S. S. Malcolm, Reform Club; V. Collinson, Manchester; J B. Sandback, Manchester.

JOHNSON AND SONS MANUFACTURING CHEMISTS (Limited).—Capital 100,000*l.*, in shares of 10*l.* To acquire and carry on an established business in the City of London. The subscribers (who take one share each) are—J. G Johnson, 23, Cross-street; G. Johnson, Canterbury; M. T. Johnson, Canterbury; E. Johnson, Canterbury; E. M. Johnson, Highgate; L. Johnson, Highgate; A. E. Wenham, Birmingham.

THE WEST VIRGINIA CATTLE COMPANY (Limited).—Capital 5000*l.*, in shares of 1*l.* The business of cattle breeders, general farmers, and dealers in connection with America. The subscribers are—C. L. Caspar, Cross Lanes, Virginia, 1750; W. H. Martindale, 27, Mincing-lane, 750; R. M. Leslie, 27, Mincing-lane, 500; E. L. Chapman, 7, Idol-lane, 1; J. T. Tugold, 9, Mincing-lane, 1; R. C. Baker, Great Eastern-street, 1; F. W. Robinson, Huddersfield, 1.

THE ANGLO-ITALIAN CONCENTRATED PRODUCE COMPANY (Limited).—Capital 120,000*l.*, in shares of 5*l.* To acquire certain patents connected with the manufacture of condensed milk and grape juice, and to make the articles which are the subject of these patents. The subscribers (who take one share each) are—J. Williams, 110, Cannon-street; H. R. Travis, Forest Hill; A. S. Sainsbury, Ramsgate; H. Ommann, Dalston; J. Levy, 27, Walton-street; F. W. Howse, 20, Cunningham-road; E. T. Wilkins, 4, Selwyn-road.

THE CLIFFORD AMALGAMATED MINES (Limited).—Capital 300,000*l.*, in shares of 1*l.* To purchase or otherwise acquire lands, mines, and mineral properties, or rights and interests in lands and mineral properties in Cornwall, or elsewhere in England, for the purpose of exploring, working, and fully developing same, and conducting the business of selling tin, copper, and other ores, metals, and minerals; smelting, manufacturing, and rendering merchantable any clay, ores, minerals, and other substances. The subscribers (who take one share each) are—A. Clegg, East Dulwich, bookkeeper; T. Williamson, 104, Elmore-street, accountant; W. J. Thomas, 81, Mildmay Park, commercial correspondent; A. Harvey, Tottenham, clerk; W. J. Twentyman, 264, Amherst-road, accountant; J. Hughff, Islington, agent; J. H. Smith, Kennington, timekeeper. The directors must not number more than eight or less than four; the subscribers will form the first board; future directors will have to qualify in 500 shares.

THE LEE HALL LAND COMPANY (Limited).—Capital 150,000*l.*, in shares of 1*l.* To acquire a property in Lancashire, and carry on the various operations of a land company. The subscribers are—J. Hubbart, West Kirby, 100; F. Thompson, Manchester, 100; G. Mountain, Manchester, 100; R. W. B. Sanderson, Manchester, 100; F. Parke, Chorley, 100; J. D. Nowell, Manchester, 100; W. Langton Manchester, 10.

THE LLEWELLYN STEAMSHIP COMPANY (Limited).—Capital 28,487*l.* 10s., in shares of 107*l.* 10s. Purchasing, owning, and working said vessel. The subscribers are—R. Bovey, 85, Gracechurch-street, 10; J. Bovey, Cardiff, 10; F. Primavesi, Newport, 5; W. C. Pain, Cardiff, 3; S. E. Fogwill, Cardiff, 3; T. A. Bovey, Penarth, 1; J. S. Blindell, Cardiff, 1.

THE LOWESTOFT LAND AND INVESTMENT COMPANY (Limited).—Capital 10,000*l.*, in shares of 10*l.* The subscribers are—A. S. Clarke, Lowestoft, 50; E. F. Crake, Lowestoft, 5*l.*; T. J. Sale, Lowestoft, 2; G. E. Clarke, Lowestoft, 1; L. Wren, Lowestoft, 1; W. Maddison, Lowestoft, 1; W. Robertson, Lowestoft, 5; J. Swetman, Lowestoft, 5.

THE DEPHOSPHORISING AND BASIC PATENTS COMPANY (Limited).—Capital 30,000*l.*, in shares of 10*l.* To acquire, use, and deal in patents in relation to iron and steel. The subscribers (who take one share each) are—S. G. Thomas, 172, Palace Chambers; G. J. Snelus, Workington; M. W. Thorp, 39, Sandringham-road; E. Riley, 2, City-road; J. Forman, Hampstead; T. H. Richardson, Middlesborough; C. Gilchrist, 9, Bridge-street.

GOLD. ITS OCCURRENCE AND EXTRACTION.

So many are now interested in gold mining enterprises, and it is so generally acknowledged that the profits resulting depend quite as much upon the purchase price, machinery used, and mode of working as upon the auriferous contents of the vein, such a volume as that now under consideration—Gold: its Occurrence and Extraction. By ALFRED G. LOCK, F.R.G.S. London: Spon, Charing Cross—will be equally acceptable to practical men and to directors and officers of public companies. Although prepared in the form of a treatise, Mr. Lock's work is really an extensive cyclopædia of the subject, since it fills no less than 1250 pages, deals with every branch of the subject, and has an index which permits any particular matter to be readily referred to. In the chapter on geological distribution each section of the world is illustrated by a map; and in describing in turn every country which produces or has produced gold, or is known to possess gold-bearing rocks, attention is given, amongt other things, to the exact localities where the metal or rocks exist, to the general geological features of each field, to the characters of the ores, to the native methods employed for extracting the gold, to the cost of necessaries and rate of wages, and to the labour question and climate. Then follows a chapter on geological occurrence and mineralogical association, embracing a summary of the theories advanced during the last 20 years to account for the origin and formation of gold in veins and alluvial deposits, and for the occurrence of nuggets, a systematic epitome of the geological formations in which gold has been formed, showing its very wide distribution in strata of almost all ages, and a catalogue of the metallic and other minerals associated with gold and auriferous rocks, with remarks upon the manner in which the ores are affected by them.

With regard to shallow placers and live rivers, which form the subject of the third chapter, Mr. Lock gives much valuable information, which is the more generally interesting because placer mining and hydraulicing can seldom be successfully carried on where the workers are compelled, legally or otherwise, to recognise the rights of their neighbours whose interests are in the soil. In this respect hydraulicers and placer miners are much in the position of chemical manufacturers, whose works give off noxious vapours. It is necessary in both cases to protect the community generally by stringent legislation where the common law proves insufficient, but as compulsion to condense noxious vapours has been of no pecuniary disadvantage to the chemical manufacturer, so it may be hoped that legislation which shall prevent the hydraulicer from rendering the rivers impassable and the surrounding land worthless for agricultural and reproductive purposes, will prove unobjectionable to the miners by compelling them to profitably treat valuable material, which at present in their reckless haste they entirely neglect. Mr. Lock very truly says that the desideratum in placer working is water, and that the merits of an auriferous patch may be summed up in a great measure by the ease and cheapness with which a sufficiency of water may be obtained. But a second and equally important point is the disposal of the tailings or waste material from which the gold has been extracted, or which has had to be removed in order to reach the gold-bearing layer. The neglect of this second point has often entailed fruitless expenditure. Of course, he adds, both conditions apply with redoubled significance to hydraulic mining, and he then cites instances to prove their weightiness even in shallow placers. Quoting from the New Zealand Government reports, he gives instances where "sluicing operations are brought to a standstill from a dread of damages consequent upon the deposit of tailings." The falling off in production at another diggings is attributed "principally to want of water," and again because 'the claims can only be worked by running the tailings through private property, and in course of time the lowest-lying portion of the ground must be covered up with the waste of sluicing if the workings continue." Similar instances are given with regard to Australia and America. The object which has hitherto guided the operations of the placer miner has, Mr. Lock remarks, almost always been to take the cream, if one may use such an expression, and to leave the skimmed milk to hurry through the ground, taking out the bulk of the gold with the greatest possible economy of time and labour, and to let the rest go. This is one great reason why the patient Chinese can make a living out of ground that has been abandoned by Europeans. The evils of such a practice are self-evident; very much of what is left is so disseminated, and the ground is rendered so unworkable, that it is doubtful whether it can ever be recovered. But the importance of greater care is now recognised, and Mr. Lock describes the various improvements in machinery and processes which have been suggested.

In the succeeding chapters deep leads or dead rivers, hydraulicing, and auriferous veinstuff are in turn treated of, and the concluding chapter is devoted to the consideration of auriferous ores and their treatment. In addition to this there are 30 pages of bibliography, an excellent glossary, and two indexes, the one geographical, the other general, so that the work is as nearly perfect as could be desired. The amount of labour involved in its production must have been enormous; but even a casual glance at the contents will suffice to convince the reader that the result amply compensates for any pains that may have been expended in the collection and arrangement of the material. It is a work that will be constantly referred to, and there need be no fear that the reference will be fruitless.

SILKSTONE AND HAIGH MOOR COLLIERY.—On Tuesday Vice-Chancellor Bacon appointed Mr. John Edey, chartered accountant, Queen Victoria-street, joint liquidator in connection with the winding up of this company. The company for working this colliery, which is situated near Leeds, was formed in 1877 with a large capital, to work the valuable coal seams and other minerals lying under lands belonging to the Earl of Mexborough and Messrs. Geo. Lane and E. E. Wheeler. The cause of the company's difficulties lies in the fact that the machinery was only partially complete when the great depression in the coal and iron trades took place. To this is to be traced the chief reasons for the present liquidation.

TREATING REFRACTORY SILVER ORES.

In connection with the milling of refractory silver ores few names are better known in the United States than that of Mr. C. A. Stetefeldt, and in a valuable and exhaustive paper specially written by him for the New York Engineering and Mining Journal concerning his recently erected Lexington mill, details are given which will be of general interest to readers of the *Mining Journal*. With reference to the paper it is remarked that progress in milling has been quite rapid during the past few years, and the number of those who are conscious of the defects of the present system and are striving to remove them is rapidly growing. Mr. Stetefeldt is one of the most advanced pioneers in this field, and his hints as to the direction in which he is seeking to attain progress will be received with interest by all and with approval by many.

The Lexington mill was designed with Mr. Stetefeldt's assistance, by Salkeld and Eckart, of San Francisco, and its machinery was furnished by Fraser and Chalmers, of Chicago. It deviates in many respects from other structures of this kind. The power is furnished by a compound Corliss engine of 250-horse power, the steam being supplied by two pairs of steel boilers. Only one pair, however, is used, consuming 11 cords of wood in 24 hours. The power is applied in the centre of the mill, and the whole mill is symmetrically arranged. An ore house with two rock breakers, and the salt house, are close to the main shaft of the mine, and connected with the mill by a tramway. The engine which furnishes power for the rock breakers during the day drives an electro-dynamo machine at night, producing 10 electric lights, of which eight are in the mill. For the drying of the ore and salt five Stetefeldt shelf dry kilns are used, which are of new construction. The stamp battery in front of the dry kilns has 50 stamps of 850 lbs. weight, and is fed by Tulloch's self feeders. A No. 30 brass wire screen is used on the battery. Its housing is connected with a system of dust chambers, with two Sturtevant exhaust fans, which keep the mill entirely free from dust. Once a week the dust collected in these chambers is discharged and taken to a dust hopper. The latter is provided at the bottom with a screw which feeds the dust gradually into an elevator connected with the battery pulp conveyers. This dust hopper is also very useful to receive any sweepings collected round the battery.

All the pulp coming from the battery elevators, before going to the roasting furnaces, passes through a revolving screen of Krom's construction. Any material carried out by the screen is returned to the battery. The pulp passing through the Krom screen accumulates in a hopper, located on the upper battery floor, and is fed from there by a screw to the conveying and elevating machinery connected with the Stetefeldt furnaces. Five stamps, on each end of the battery, with a salt hopper, were set apart for crushing and feeding salt separately; but owing to a faulty construction of the salt feeder we were forced to crush ore and salt together, and use these stamps for the same purpose. On each end of the battery is a Stetefeldt furnace of largest size. Each furnace has a Sellers hoist in order to have easy and convenient access to the floors on the top of the furnaces. The amalgamating plant consists of 20 combination pans arranged in one row, 10 settlers, two clean up pans, and two agitators. A bucket elevator raises the quicksilver to a distributing tank above the pans. On a level with the strainer floor is the retort room, with two retorts and a zinc granulating furnace, the granulated zinc being used in the pans. One of the retorts has a new style of condenser, which will be described later on. The furnace for melting the bullion, a reverberatory furnace with gas generator, is in a separate building detached from the mill. Engine and boilers are located in front of the pan room.

The shelf dry kilns which Mr. Stetefeldt has for the first time introduced at the Lexington mill are claimed to be free from all the objections of the old fashioned flue kilns. Their construction is based upon the Hasenclever principle. A brick shaft 7 ft. wide and 4 ft. deep is filled with five sets of cast-iron shelves, three shelves in one row arranged zigzag with an inclination of 38°. Where two shelves meet is an open slit 4½ in. wide. Over the top row of shelves is placed a hopper to receive the ore. The ore slides down on the shelves, and does not come to rest until they are all filled. If now ore is drawn from the bottom shelves, the equilibrium is disturbed, and a motion takes place throughout the whole kiln, the ore taken away from the bottom shelf being replaced from the hopper on the top. Should the charge hang anywhere in the slits, which may happen if several extra large pieces of ore come together, it is touched with a light poker, which is inserted through a small opening in the wall, provided for that purpose, in front of each shelf. The heating of the kiln is done by a fireplace near its base, the flame of which passes up through a flue and enters the kiln under the top row of shelves. From here the hot gases pass to and fro through the triangular spaces between the shelves, descending in the side walls of the shaft, and finally falling into a flue below the fireman's floor connected with a chimney. Hence the ore is heated from top and bottom by a swift current of hot air which carries the moisture rapidly away. Such an arrangement is made for very good reasons. If the fire were applied first under the bottom row of shelves the latter would be in danger of getting overheated and warped by careless firing. A part of the moisture would also be liable to condense again coming into contact with the moist and cold ore on the upper shelves. As it is the top shelves, exposed to the greatest heat, are always filled with cold and moist ore, and the temperature in the whole kiln is very uniform. Four of these kilns (a pair of them being united into one structure) dry with greatest ease 50 tons of ore in 24 hours, and one is sufficient to dry eight tons of salt, with from 10 to 15 per cent. moisture, in 24 hours. The salt gets very dry. Every crystal with mother solution decrepitates, and hard lumps remain in the kiln sufficiently long to disintegrate completely. The labour in a shift requires the attendance of one man to keep the fires and look after the salt kiln, and one man to discharge the dry ore and salt, and take them to the battery. The amount of wood consumed in 24 hours for the five kilns is two and a half cords. Since the ore has only a sliding motion no dust is formed and carried away with the draught.

The first really effective attempt to keep a dry crushing battery free of dust was made by the millwright, D Bell, in the construction of the Ontario mill, in 1877. He connected the battery housing by nearly horizontal wooden boxes with the enlarged flue of an old fashioned dry kiln. In the Lexington mill battery the dust chambers are thus constructed. In front of the battery, and suspended over head, is a wooden box or chamber 110 ft. long, 5 ft. wide, and 6 ft. high. The bottom of this chamber is formed by 22 sheet iron hoppers, 5 ft. square, which end, each one, in a canvas hose 4 in. in diameter. Each battery housing for five stamps is connected with the chamber by a stove-pipe 8 in. in diameter, standing at an angle of 75°. Across the chamber are partitions which force the current of air, created by a Sturtevant suction fan, up and down, thus facilitating the settling of the dust. The draught given to each battery is regulated by a damper. The dust collected in the hoppers can be taken out at any time through the canvas hose attached to each hopper. It is taken to the dust hopper, mentioned above, and is at pleasure gradually mixed with the pulp coming from the battery. This system works very well, and should be generally introduced. With a strong draught the dust which settles in the dust chambers amounts to about 1 per cent. of the ore going through the battery.

So far nothing has superseded the stamps for fine crushing of ore such as is needed for amalgamation; but Mr. Stetefeldt is firmly convinced that Krom's improved steel rollers, if they be only intelligently used and given a fair trial, will make the stamps a thing of the past. Who, he asks, would put up with the defects of a dry crushing stamp battery if we were not used to them? But such revolutions are very slow, and in the mean time we should devise some plan to increase the crushing capacity of the stamps. My idea is this: 1. To crush coarser than is desirable for the ore to be treated. 2. To sift the crushed ore through a revolving Krom screen. 3. To concentrate the coarse material carried out by the screen in a Krom air jig. 4. To return the concentrations to the battery. The Lexington mill was constructed with a view to test the practicability of this idea, which has been carried out with perfect success as far as the first and second points are concerned. We crushed the ore in the battery through a No. 30 screen, and had No. 40 on the Krom screen. The coarse material which did not sift through a No. 40 screen, about 10 per cent. of the ore was returned to the battery. It did not increase in quantity by being kept in rotation. He has no doubt that the ore will concentrate well in a Krom air jig, its grade of size being especially favourable for this process. Now, he continues, if you crush in the battery through a No. 20 screen, sift through a No. 40, and concentrate the coarse material, say 10 in. to 1, it is clear that the capacity of the battery, without much extra expense, will be materially increased. The same system, it seems to me, could also be carried out to great advantage with rollers. After the ore is pulverised to a certain size, concentrate the coarse material and return the concentrations for finer pulverising.

It is strange, as Mr. Stetefeldt remarks, that no improvements have been made in the system of retorting amalgam, and he observes that the present method is most defective. It invariably poisons, in the course of six months, the men who work at it. At the end of the retorting, the retort remains full of quicksilver fumes which cannot get out. Condensed quicksilver is always found in the retort. Besides the distilled quicksilver is, in part, in a very undesirable form: he is speaking of the black slum which forms in condensation, and is nothing else but finely divided metal. He has succeded in obviating these difficulties, and will give a description of the new system of retorting introduced at the Lexington mill. The principle applied is to create a vacuum in the retort by a steam blast to pass a continuous stream of air through the retort, and to condense quicksilver and steam together. There is no change in the construction of the retort. The condenser consists of a box made of boiler iron which is perforated by many tubes, like a steam condenser, so as to produce a large cooling surface. Cold water is made to circulate through the tubes. Where the retort connects with the condenser there is a steam blast. On the opposite end of the condenser is a gas-pipe which connects with the front of the retort through an opening in the cover. Thus, a complete circuit is established. When the steam blast is turned on a vacuum is created in the retort, and a pressure in the condenser. This starts the motion, and the same air originally in the retort and condenser keeps in constant circulation. Its oxygen is soon absorbed by the base metals in the amalgam, and a nitrogen atmosphere remains which prevents any possible oxidation of the quicksilver. The quicksilver and steam condense and runs out through properly arranged pipes. Only a very slight amount of black quicksilver is formed. From the gas-pipe which connects the condenser with the retort cover branches out a pipe 10 or 12 ft. long, open at the end. This pipe acts as an equaliser of pressure created by the expansion of the air inside the retort when it is heated. As soon as the distillation of the quicksilver is started it goes on very rapidly at the rate of 600 lbs. per hour with very light fire. At the end of the operation the retort is heated red-hot. When the quicksilver ceases to run the steam blast is kept in operation for half an hour longer to remove every trace of quicksilver fumes from the retort. The retort can be opened hot without any risk of getting salivated. A condenser for the second retort has been immediately ordered for the Lexington mill.

In the bullion melting furnace department progress has also been made. The furnace erected at the Lexington is a small reverberatory furnace, with gas generator, in which a mixture of charcoal and wood is used as fuel. The hearth of the furnace is made of a boile iron shell, lined at the bottom with a layer of 4½ in. of Portlanp cement. Upon this foundation is built an inverted arch of fire-brick put in with a mixture of one-half fire-clay and one-half fire-brick dust moistened with a concentrated solution of borax. The sides are also made of fire-brick using the same mortar. The borax, in forming a glass, makes the joints perfectly metal-tight. The hearth is 3 ft. 6 in. long, 2 ft. 9 in. wide, and its greatest depth is 6 in. The grate surface of gas generator is 2 ft. by 18 in. A door below the flue is used for charging the bullion and drawing the slag. The metal is discharged by a tap, and runs into moulds placed on a truck which is pushed forward as mould after mould fills. It is surprising how uniform the bars are in fineness. A sample taken at the beginning and one at the end of discharging showed a difference of only two-tenths of 1000 in silver by Vollhard's volumetric assay. It takes from five to six hours to melt and cast into bars a charge of 1000 lbs.

The ore which comes at present from the 200 and 300 foot levels of the Lexington mine is very base. Zinc blende, galena, iron pyrites, copper pyrites, and native silver are the minerals which compose the ore in a gangue of very hard quartz associated with equally hard silicate of manganese, and some carbonate of manganese. He estimates that the ore contains from 30 to 40 per cent. in sulphurets. Outside of native silver, which in some stopes is very abundant, no precious silver minerals are found. Strange to say, the iron pyrites carries more silver than any other of the sulphurets. When the iron pyrites is rich in silver it is always associated with silicate of manganese. He picked up such a piece in the ore house, and it contained 100 ozs. of silver per ton. The ore contains also gold in the proportion of about 1 oz. for every 100 ozs. of silver. Mr. Stetefeldt mentions a curious observation made at the Lexington mill. After roasting in the shaft of the Stetefeldt furnace at such a high temperature that a slight excess of heat would sinter the ore, we found that the chlorination of the tailings varied between the limits of 4·3 and 22·3 per cent. as compared with 19·4 and 55·1 per cent., while the roasting was done at much lower temperature. One

would have expected just the contrary result. Very likely the energetic decomposition going on in the very hot charge made the lumps porous, and in cooling down with a water spray they were much more disintegrated.

With regard to the extraction of gold by amalgamation from auriferous silver ores which have been roasted with salt, Mr. Stetefeldt remarks that it has always been very incomplete, and that according to his observations the percentage of gold extracted decreases the more time is consumed in roasting, the higher the heat employed, and the longer the charge is allowed to remain red-hot. In the mill of the Murphy Mine, Ophir Canyon, Nevada, the extraction of the gold with reverberatory furnace roasting was only about 25 per cent. With the experimental Stetefeldt furnace erected there he succeeded in extracting 80 per cent. of the gold by amalgamation. Results not quite so high were obtained at the Auburn mill, Reno, Nevada, with ore roasted in a Stetefeldt furnace. According to Professor Blake's report on the Alice Mine, Butte, Montana, where the roasting is done in a Howell furnace, the percentage of gold extracted from Jan. 1 to Aug. 6, 1879, was only 55·6 per cent. Mr. Stetefeldt was in hopes of obtaining much better results at the Lexington mill; but so far their first results show only 58·8 and 60·8 per cent. of the gold extracted. This is, no doubt, due to the high temperature they have to employ in roasting, and to the long exposure of the red-hot ore on the cooling-floor, both of which are necessary to get high chlorinations of the silver. The effect is equal to a reverberatory furnace roasting. Experiments are now in progress to extract a higher percentage of the gold.

FOREIGN MINING AND METALLURGY.

The condition of the Belgian coal markets remains tolerably favourable, although the season has not thus far been very encouraging to coalowners. It is, perhaps, not altogether a cause of dissatisfaction to colliery proprietors that the demand has slackened a little for some descriptions, as labour has become somewhat scarce. Industrial coal has continued in well sustained demand, and prices have been generally pretty well maintained. The situation, upon the whole, is still fairly good. The question is will it be maintained? Its maintenance must depend materially upon the course of metallurgical affairs, and on this head we are compelled to admit that the future does not present itself under a very brilliant aspect. The intelligence received with respect to the German coal trade continues favourable. The demand is good, and there are few complaints on the part of coalowners. The demand for industrial coal has, perhaps, lost a little of its activity, but household coal has, on the other hand, been in somewhat increased request. Deliveries of German coal to Upper Italy are still continued, although upon a comparatively small scale. During October 4410 tons were dispatched. It is stated that German coal is found to compare advantageously with English coal in Northern Italy as regards its quality, although English coal can still be delivered upon slightly cheaper terms.

The aspect of the Belgian iron trade has become rather dull. Orders scarcely come to hand to a sufficient extent to enable the markets to maintain a firm tone. Ironmasters have to run after clients, and this is a certain proof that the situation is in favour of the latter. The principal Belgian ironworks are still well employed, having orders on hand which will occupy them for some time to come, but the less important rolling-mills and the second rate construction establishments begin to find themselves in a less favourable condition, from which they are endeavouring to escape by sacrifices, which exert some influence upon the markets generally. Upon the whole it appears that Belgian ironmasters will have to content themselves for some time to come with more moderate profits, although they may obtain some compensation for this by securing a constant stream of orders. English pig has made 2*l.* 10s. 5d. to 2*l.* 11s. 3d. per ton upon the Belgian markets. In the Belgian Luxembourg, at Athus, and at Halanzy casting-pig has been quoted at 2*l.* 10s. per ton. Refining Athus pig has still been maintained nominally at 2*l.* 6s. per ton, but transactions might probably be carried through upon slightly lower terms. Iron has continued to be quoted upon the Belgian markets at 5*l.* 4s. per ton, nevertheless this rate has been maintained with difficulty, and in the case of important transactions some concessions might probably be obtained. Plates have been in good request; at the principal works the quotation current has been 7*l.* 8s. per ton, but the less well established rolling-mills would accept 7*l.* 4s. per ton. Boiler-plates have ranged between 8*l.* and 8*l.* 4s. per ton.

The slackening of business which has been noticed of late in the Paris iron trade has become rather more decided. The general quotation for merchants' iron has been 7*l.* 16s. per ton; but some reduction would probably be made from this rate in order to obtain business. On the other hand, we learn that the monthly meeting of he forgemasters of the Nord at Maubeuge decided recently to maintain quotations at their present level. Some firms represented at this meeting even advocated an advance in quotations. The contracts secured in the Nord for execution in the course of 1883, already amount to 170,000 tons. No further fall has been noticed in the German iron trade, but it is quite possible that it may still occur. Producers in the various districts, and especially in Westphalia, are making efforts to check the downward tendency in prices by attempting to form a firm combination. The Siegen convention of ironmasters has resolved to fix the price of pig at a certain point; and, with this object, it is proposed to reduce the production to 37,000 tons per month; this will represent 90 per cent. of the whole production of the blast furnaces of the Siegen, Altenkirchen, and Olpe districts. We may fairly doubt the efficacy of such conventions as these in presence of the small results obtained hitherto by analogous associations. Pig has not been very well maintained upon the German markets, and casting pig has even experienced a fresh reduction. The Silesian Forgemasters' Association has fixed the price of iron for the first quarter of 1883 at 6*l.* 17s. 4d. per ton. The current rate at present has been 7*l.* per ton. Plates and iron have been pretty well sustained, as well as certain descriptions of steel manufactures. A contact for iron sleepers has been let at Breslau upon terms reflecting the downward tendency in prices. A contract has also been let for tyres for the Baden Railways. The lowest tender submitted was 11*l.* 11s. 4d. and the highest 15*l.* 6s. 2d. per ton. The blast furnaces of the Zollverein produced during October 283,000 tons of pig, as compared with 241,000 tons in October, 1881.

TECHNICAL ENGINEERING LECTURES.—With a view to afford facilities to members for giving their pupils and assistants the advantage of acquiring sound technical knowledge during their studentship, the Council of the Society of Engineers have arranged for a series of scientific lectures to be given in their Hall upon subjects which are likely to be useful to them in their subsequent professional practice. The courses for the present session include eight lectures on Strains in Ironwork, by Mr. Henry Adams, Professor of Engineering at the City of London College; eight upon Land Surveying and Levelling, by Mr. A. T. Walmisley, A.M.I.C.E.; and eight on Water Supply and Drainage, by Mr. Peregrine Birch, M.I.C.E. From a glance of the syllabus of Prof. Adams's course it is evident that great care has been taken that it shall afford all the purely scientific instruction the young engineer is likely to require.

CASSELL'S PUBLICATIONS.—Canon Farrar's Life and Work of St. Paul, part II., contains a well-executed map showing Paul's second missionary journey, and includes the chapters relating to its commencement—Paul in Galatia, and a sketch of Christianity in Macedonia. Knight's Dictionary of Mechanics, part 72, extends from Spinning-head to Stamping-press.

CORNISH PUMPING-ENGINES.—The number of pumping-engines reported for October is 14. They have consumed 1810 tons of coal, and lifted 12·8 million tons of water 10 fms. high. The average duty of the whole is, therefore, 47,700,000 lbs. lifted 1 ft. high by the consumption of 112 lbs. of coal. The following engines have exceeded the average duty:—

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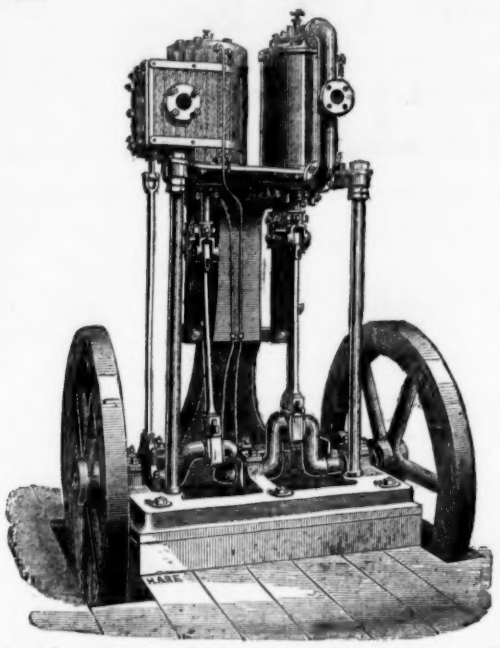

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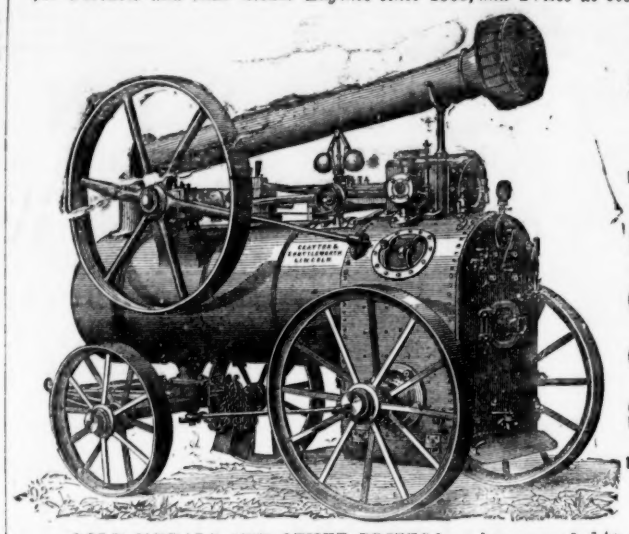

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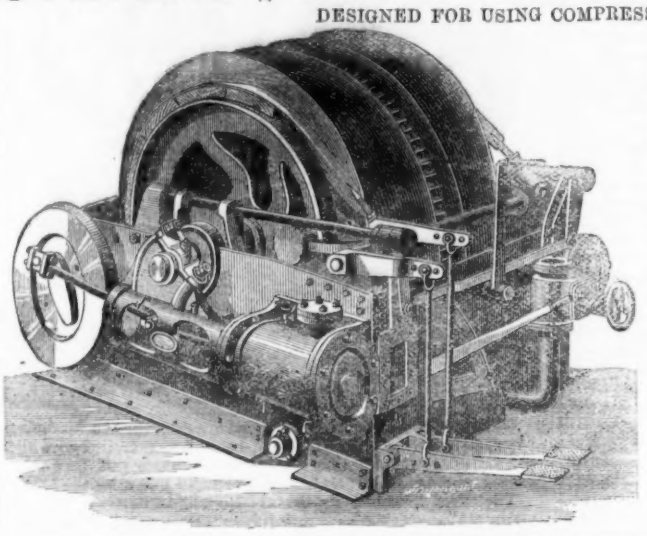

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